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Subj: MARINE CORPS ENGINEER AND UTILITIES TRAINING AND READINESS MANUAL,  
(SHORT TITLE: ENG & UTIL T&R MANUAL)

Ref: (a) MCO P3500.72A  
(b) MCO 1553.3A  
(c) MCO 3400.3F  
(d) MCO 3500.27B W/Erratum  
(e) MCRP 3-0A  
(f) MCRP 3-0B  
(g) MCO 1553.2A

1. Purpose. Per reference (a), this T&R Manual establishes Core Capability Mission Essential Tasks (MET) for readiness reporting and required events for standardization training of Marines and Navy personnel assigned to the Marine Corps Engineer battalions. Additionally, it provides tasking for formal schools preparing personnel for service in the Marine Corps Engineer and Utilities community. This NAVMC supersedes MCO 1510.95A Engineer ITS and MCO 1510.96A Utilities ITS.

2. Scope

a. The Core Capability Mission Essential Task List (METL) in this manual is used in Defense Readiness Reporting System (DRRS) by all Engineer Support Battalions and Combat Engineer Battalions for the assessment and reporting of unit readiness. Units achieve training readiness for reporting in DRRS by gaining and sustaining proficiency in the training events in this manual at both collective (unit) and individual levels. Commanders are to report the training readiness of their units based on the percentage of core METs trained to standard in accordance with this Training and Readiness Manual.

b. Per reference (b), commanders will conduct an internal assessment of the unit's ability to execute each MET, and develop long-, mid-, and short-range training plans to sustain proficiency in each MET. Training plans will incorporate these events to standardize training and provide objective assessment of progress toward attaining combat readiness. Commanders will keep records at the unit and individual levels to record training achievements, identify training gaps, and document objective assessments of readiness associated with training Marines. Commanders will use reference (c) to incorporate nuclear, biological, and chemical defense training into training plans and reference (d) to integrate operational risk management. References (e) and (f) provide amplifying information for effective planning and management of training within the unit.

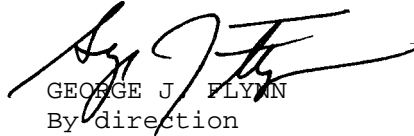
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c. Formal school and training detachment commanders will use references (a) and (g) to ensure programs of instruction meet skill training requirements established in this manual, and provide career-progression training in the events designated for initial training in the formal school environment.

3. Information. CG, TECOM will update this T&R Manual as necessary to provide current and relevant training standards to commanders, and to ensure a current Core Capabilities METL is available for use in DRRS by the Marine Corps Combat Engineer Battalion and Engineer Support Battalion. All questions pertaining to the Marine Corps Ground T&R Program and Unit Training Management should be directed to: Commanding General, TECOM (Ground Training Branch C 469), 1019 Elliot Road, Quantico, VA 22134.

4. Command. This Directive is applicable to the Marine Corps Total Force.

5. Certification. Reviewed and approved this date.

  
GEORGE J. FLYNN  
By direction

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CHAPTER 1

OVERVIEW

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CHAPTER 1

OVERVIEW

**1000. INTRODUCTION**

1. The T&R Program is the Corps' primary tool for planning, conducting and evaluating training, and assessing training readiness. Subject matter experts (SMEs) from the operating forces developed core capability Mission Essential Task Lists (METLs) for ground communities derived from the Marine Corps Task List (MCTL). T&R manuals are built around these METLs and all events contained in T&R manuals relate directly to this METL. This comprehensive T&R Program will help to ensure the Marine Corps continues to improve its combat readiness by training more efficiently and effectively. Ultimately, this will enhance the Marine Corps' ability to accomplish real-world missions.

2. The T&R Manual contains the individual and collective training requirements to prepare units to accomplish their combat mission. The T&R Manual is not intended to be an encyclopedia that contains every minute detail of how to accomplish training. Instead, it identifies the minimum standards that Marines must be able to perform in combat. The T&R Manual is a fundamental tool for commanders to build and maintain unit combat readiness. Using this tool, leaders can construct and execute an effective training plan that supports the unit's METL. More detailed information on the Marine Corps Ground T&R Program is found in reference (a).

**1001. UNIT TRAINING**

1. The training of Marines to perform as an integrated unit in combat lies at the heart of the T&R program. Unit and individual readiness are directly related. Individual training and the mastery of individual core skills serve as the building blocks for unit combat readiness. A Marine's ability to perform critical skills required in combat is essential. However, it is not necessary to have all individuals within a unit fully trained in order for that organization to accomplish its assigned tasks. Manpower shortfalls, temporary assignments, leave, or other factors outside the commander's control, often affect the ability to conduct individual training. During these periods, unit readiness is enhanced if emphasis is placed on the individual training of Marines on-hand. Subsequently, these Marines will be mission ready and capable of executing as part of a team when the full complement of personnel is available.

2. Commanders will ensure that all tactical training is focused on their combat mission. The T&R Manual is a tool to help develop the unit's training plan. In most cases, unit training should focus on achieving unit proficiency in the core capabilities METL. However, commanders will adjust their training focus to support METLs associated with a major OPLAN/CONPLAN or named operation as designated by their higher commander and reported accordingly in the Defense Readiness Reporting System (DRRS). Tactical

training will support the METL in use by the commander and be tailored to meet T&R standards. Commanders at all levels are responsible for effective combat training. The conduct of training in a professional manner consistent with Marine Corps standards cannot be over emphasized.

3. Commanders will provide personnel the opportunity to attend formal and operational level courses of instruction as required by this Manual. Attendance at all formal courses must enhance the warfighting capabilities of the unit as determined by the unit commander.

## **1002. UNIT TRAINING MANAGEMENT**

1. Unit Training Management (UTM) is the application of the Systems Approach to Training (SAT) and the Marine Corps Training Principles. This is accomplished in a manner that maximizes training results and focuses the training priorities of the unit in preparation for the conduct of its wartime mission.

2. UTM techniques, described in references (b) and (e), provide commanders with the requisite tools and techniques to analyze, design, develop, implement, and evaluate the training of their unit. The Marine Corps Training Principles, explained in reference (b), provide sound and proven direction and are flexible enough to accommodate the demands of local conditions. These principles are not inclusive, nor do they guarantee success. They are guides that commanders can use to manage unit-training programs. The Marine Corps training principles are:

- Train as you fight
- Make commanders responsible for training
- Use standards-based training
- Use performance-oriented training
- Use mission-oriented training
- Train the MAGTF to fight as a combined arms team
- Train to sustain proficiency
- Train to challenge

3. To maintain an efficient and effective training program, leaders at every level must understand and implement UTM. Guidance for UTM and the process for establishing effective programs are contained in references (a) through (g).

## **1003. SUSTAINMENT AND EVALUATION OF TRAINING**

1. The evaluation of training is necessary to properly prepare Marines for combat. Evaluations are either formal or informal, and performed by members of the unit (internal evaluation) or from an external command (external evaluation).

2. Marines are expected to maintain proficiency in the training events for their MOS at the appropriate grade or billet to which assigned. Leaders are responsible for recording the training achievements of their Marines. Whether it involves individual or collective training events, they must ensure proficiency is sustained by requiring retraining of each event at or



before expiration of the designated sustainment interval. Performance of the training event, however, is not sufficient to ensure combat readiness. Leaders at all levels must evaluate the performance of their Marines and the unit as they complete training events, and only record successful accomplishment of training based upon the evaluation. The goal of evaluation is to ensure that correct methods are employed to achieve the desired standard, or the Marines understand how they need to improve in order to attain the standard. Leaders must determine whether credit for completing a training event is recorded if the standard was not achieved. While successful accomplishment is desired, debriefing of errors can result in successful learning that will allow ethical recording of training event completion. Evaluation is a continuous process that is integral to training management and is conducted by leaders at every level and during all phases of planning and the conduct of training. To ensure training is efficient and effective, evaluation is an integral part of the training plan. Ultimately, leaders remain responsible for determining if the training was effective.

3. The purpose of formal and informal evaluation is to provide commanders with a process to determine a unit's/Marine's proficiency in the tasks that must be performed in combat. Informal evaluations are conducted during every training evolution. Formal evaluations are often scenario-based, focused on the unit's METs, based on collective training standards, and usually conducted during higher-level collective events. References (a) and (f) provide further guidance on the conduct of informal and formal evaluations using the Marine Corps Ground T&R Program.

#### **1004. ORGANIZATION**

1. T&R Manuals are organized in one of two methods: unit-based or community-based. Unit-based T&R Manuals are written to support a type of unit (Infantry, Artillery, Tanks, etc.) and contain both collective and individual training standards. Community-based are written to support an Occupational Field, a group of related Military Occupational Specialties (MOSs), or billets within an organization (EOD, NBC, Intel, etc.), and usually only contain individual training standards. T&R Manuals are comprised of chapters that contain unit METs, collective training standards (CTS), and individual training standards (ITS) for each MOS, billet, etc.

2. The Tank T&R Manual is a unit-based manual comprised of 10 chapters. Chapter 2 lists the Core Capability METs and their related Battalion and Company-level events. Chapters 3 through 8 contain collective events. Chapters 9 and 10 contain individual events.

#### **1005. T&R EVENT CODING**

1. T&R events are coded for ease of reference. Each event has a 4-4-4-digit identifier. The first four digits represent the MOS or occupational field (e.g. 1141, 1361, etc.).

2. The second four digits represent the functional or duty area (e.g. ADMN = ADMINISTRATION, MANT = MAINTENANCE, XENG = GENERAL ENGINEERING). The last four digits represent the Individual or Collective event level and sequencing number of the event. Every event has a sequence number from 001 to 999. For

Collective Events in this manual, the hundreds column identifies E-Coded responsibilities. E-Coded Collective Events sequenced in 9xx range are E-Coded for both ESB and CEB units. E-Coded Collective Events sequenced in 8xx range are E-Coded for CEB units. E-Coded Collective Events sequenced in 7xx range are E-Coded for ESB units. See Sect 1008 for more information on E-Coded events.

The T&R levels are shown in Figure (1). An example of the T&R coding used in this manual is shown in Figure (2).

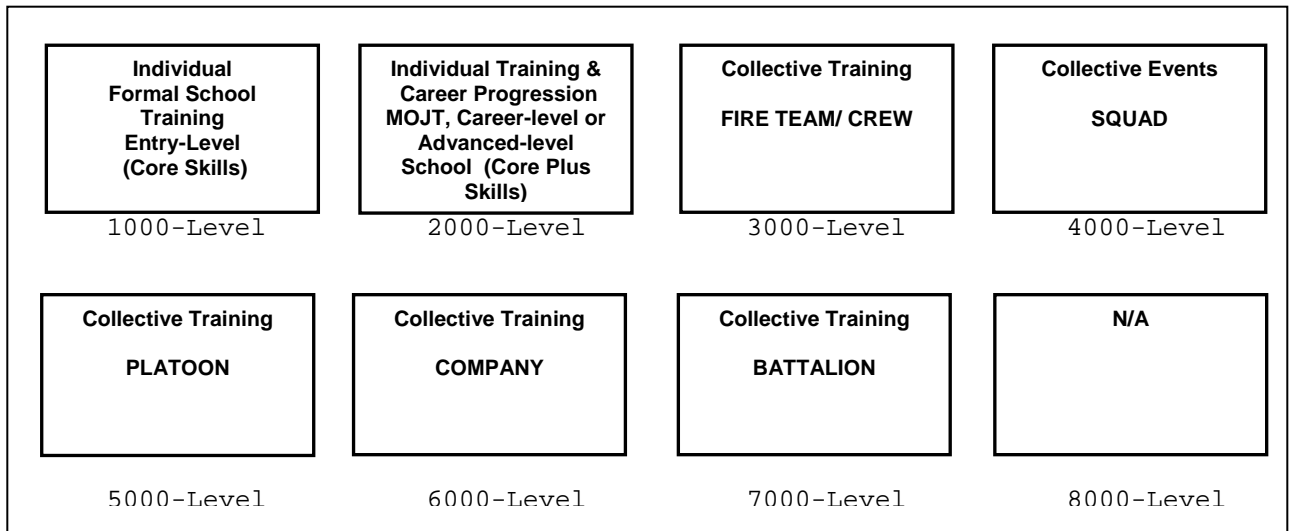


Figure 1: T&R Event Levels

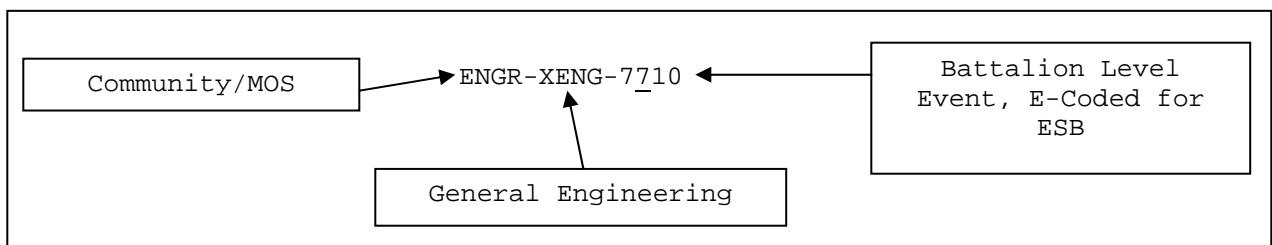


Figure 2: T&R Event Coding

## 1006. COMBAT READINESS PERCENTAGE

1. The Marine Corps Ground T&R Program includes processes to assess readiness of units and individual Marines. Every unit in the Marine Corps maintains a basic level of readiness based on the training and experience of the Marines in the unit. Even units that never trained together are capable of accomplishing some portion of their missions. Combat readiness assessment does not associate a quantitative value for this baseline of readiness, but uses a "Combat Readiness Percentage", as a method to provide a concise descriptor of the recent training accomplishments of units and Marines.

2. Combat Readiness Percentage (CRP) is the percentage of required training events that a unit or Marine accomplishes within specified sustainment intervals.

3. In unit-based T&R Manuals, unit combat readiness is assessed as a percentage of the successfully completed and current (within sustainment interval) key training events called "Evaluation-Coded" (E-Coded) Events. E-Coded Events and unit CRP calculation are described in follow-on paragraphs. CRP achieved through the completion of E-Coded Events is directly relevant to readiness assessment in DRRS.

4. Individual combat readiness, in both unit-based and community-based T&R Manuals, is assessed as the percentage of required individual events in which a Marine is current. This translates as the percentage of training events for his/her MOS and grade (or billet) that the Marine successfully completes within the directed sustainment interval. Individual skills are developed through a combination of 1000-level training (entry-level formal school courses), individual on-the-job training in 2000-level events, and follow-on formal school training. Skill proficiency is maintained by retraining in each event per the specified sustainment interval.

#### **1007. EVALUATION-CODED (E-CODED) EVENTS**

1. Unit-type T&R Manuals can contain numerous unit events, some for the whole unit and others for integral parts that serve as building blocks for training. To simplify training management and readiness assessment, only collective events that are critical components of a mission essential task (MET), or key indicators of a unit's readiness, are used to generate CRP for a MET. These critical or key events are designated in the T&R Manual as Evaluation-Coded (E-Coded) events. Formal evaluation of unit performance in these events is recommended because of their value in assessing combat readiness. Only E-Coded events are used to calculate CRP for each MET.

2. The use of a METL-based training program allows the commander discretion in training. This makes the T&R Manual a training tool rather than a prescriptive checklist.

#### **1008. CRP CALCULATION**

1. Collective training begins at the 3000 level (team, crew or equivalent). Unit training plans are designed to accomplish the events that support the unit METL while simultaneously sustaining proficiency in individual core skills. Using the battalion-based (unit) model, the battalion (7000-level) has collective events that directly support a MET on the METL. These collective events are E-Coded and the only events that contribute to unit CRP. This is done to assist commanders in prioritizing the training toward the METL, taking into account resource, time, and personnel constraints.

2. Unit CRP increases after the completion of E-Coded events. The number of E-Coded events for the MET determines the value of each E-Coded event. For example, if there are 4 E-Coded events for a MET, each is worth 25% of MET CRP. MET CRP is calculated by adding the percentage of each completed and current (within sustainment interval) E-Coded training event. The percentage

for each MET is calculated the same way and all are added together and divided by the number of METS to determine unit CRP. For ease of calculation, we will say that each MET has 4 E-Coded events, each contributing 25% towards the completion of the MET. If the unit has completed and is current on three of the four E-Coded events for a given MET, then they have completed 75% of the MET. The CRP for each MET is added together and divided by the number of METS to get unit CRP; unit CRP is the average of MET CRP.

For Example:

MET 1: 75% complete (3 of 4 E-Coded events trained)  
MET 2: 100% complete (6 of 6 E-Coded events trained)  
MET 3: 25% complete (1 of 4 E-Coded events trained)  
MET 4: 50% complete (2 of 4 E-Coded events trained)  
MET 5: 75% complete (3 of 4 E-Coded events trained)

To get unit CRP, simply add the CRP for each MET and divide by the number of METS:

MET CRP:  $75 + 100 + 25 + 50 + 75 = 325$

Unit CRP:  $325 \text{ (total MET CRP)} / 5 \text{ (total number of METS)} = 65\%$

#### 1009 T&R EVENT COMPOSITION

1. This section explains each of the components of a T&R event. These items are included in all events in each T&R manual.

a. Event Code (see Sect 1006). The event code is a 4-4-4 character set. For individual training events, the first 4 characters indicate the occupational function. The second 4 characters indicate functional area (TAC, CBTS, VOPS, etc.). The third 4 characters are simply a numerical designator for the event.

b. Event Title. The event title is the name of the event.

c. E-Coded. This is a "yes/no" category to indicate whether or not the event is E-Coded. If yes, the event contributes toward the CRP of the associated MET. The value of each E-Coded event is based on number of E-Coded events for that MET. Refer to paragraph 1008 for detailed explanation of E-Coded events.

d. Supported MET(s). List all METs that are supported by the training event.

e. Sustainment Interval. This is the period, expressed in number of months, between evaluation or retraining requirements. Skills and capabilities acquired through the accomplishment of training events are refreshed at pre-determined intervals. It is essential that these intervals are adhered to in order to ensure Marines maintain proficiency.

f. Billet. Individual training events may contain a list of billets within the community that are responsible for performing that event. This

ensures that the billet's expected tasks are clearly articulated and a Marine's readiness to perform in that billet is measured.

g. Grade. Each individual training event will list the rank(s) at which Marines are required to learn and sustain the training event.

h. Initial Training Setting. For Individual T&R Events only, this specifies the location for initial instruction of the training event in one of three categories (formal school, managed on-the-job training, distance learning). Regardless of the specified Initial Training Setting, any T&R event may be introduced and evaluated during managed on-the-job training.

(1) "FORMAL" - When the Initial Training Setting of an event is identified as "FORMAL" (formal school), the appropriate formal school or training detachment is required to provide initial training in the event. Conversely, formal schools and training detachments are not authorized to provide training in events designated as Initial Training Setting "MOJT" or "DL." Since the duration of formal school training must be constrained to optimize Operating Forces' manning, this element provides the mechanism for Operating Forces' prioritization of training requirements for both entry-level (1000-level) and career-level (2000-level) T&R Events. For formal schools and training detachments, this element defines the requirements for content of courses.

(2) "DL" - Identifies the training event as a candidate for initial training via a Distance Learning product (correspondence course or MarineNet course).

(3) "MOJT" - Events specified for Managed On-the-Job Training are to be introduced to Marines, and evaluated, as part of training within a unit by supervisory personnel.

i. Event Description. Provide a description of the event purpose, objectives, goals, and requirements. It is a general description of an action requiring learned skills and knowledge (e.g. Camouflage the M1A1 Tank).

j. Condition. Describe the condition(s), under which tasks are performed. Conditions are based on a "real world" operational environment. They indicate what is provided (equipment, materials, manuals, aids, etc.), environmental constraints, conditions under which the task is performed, and any specific cues or indicators to which the performer must respond. When resources or safety requirements limit the conditions, this is stated.

k. Standard. The standard indicates the basis for judging effectiveness of the performance. It consists of a carefully worded statement that identifies the proficiency level expected when the task is performed. The standard provides the minimum acceptable performance parameters and is strictly adhered to. The standard for collective events is general, describing the desired end-state or purpose of the event. While the standard for individual events specifically describe to what proficiency level in terms of accuracy, speed, sequencing, quality of performance, adherence to procedural guidelines, etc., the event is accomplished.

l. Event Components. Describe the actions composing the event and help the user determine what must be accomplished and to properly plan for the event.

m. Prerequisite Events. Prerequisites are academic training or other T&R events that must be completed prior to attempting the task. They are lower-level events or tasks that give the individual/unit the skills required to accomplish the event. They can also be planning steps, administrative requirements, or specific parameters that build toward mission accomplishment.

n. Chained Events. Collective T&R events are supported by lower-level collective and individual T&R events. This enables unit leaders to effectively identify subordinate T&R events that ultimately support specific mission essential tasks. When the accomplishment of any upper-level events, by their nature, result in the performance of certain subordinate and related events, the events are "chained." The completion of chained events will update sustainment interval credit (and CRP for E-Coded events) for the related subordinate level events.

o. Related Events. Provide a list of all Individual Training Standards that support the event.

p. References. The training references are utilized to determine task performance steps, grading criteria, and ensure standardization of training procedures. They assist the trainee in satisfying the performance standards, or the trainer in evaluating the effectiveness of task completion. References are also important to the development of detailed training plans.

q. Distance Learning Products (IMI, CBT, MCI, etc.). Include this component when the event can be taught via one of these media methods vice attending a formal course of instruction or receiving MOJT.

r. Support Requirements. This is a list of the external and internal support the unit and Marines will need to complete the event. The list includes, but is not limited to:

- Range(s)/Training Area
- Ordnance
- Equipment
- Materials
- Other Units/Personnel
- Other Support Requirements

s. Miscellaneous. Provide any additional information that assists in the planning and execution of the event. Miscellaneous information may include, but is not limited to:

- Admin Instructions
- Special Personnel Certifications
- Equipment Operating Hours
- Road Miles

2. Community-based T&R manuals have several additional components not found in unit-based T&R manuals. These additions do not apply to this T&R Manual.

#### **1010. CBRNE TRAINING**

1. All personnel assigned to the operating force must be trained in chemical, biological, radiological, nuclear, and explosive incident defense (CBRNE), in order to survive and continue their mission in this environment. Individual proficiency standards are defined as survival and basic operating standards. Survival standards are those that the individual must master in order to survive CBRNE attacks. Basic operating standards are those that the individual, and collectively the unit, must perform to continue operations in a CBRNE environment.

2. In order to develop and maintain the ability to operate in an CBRNE environment, CBRNE training is an integral part of the training plan and events in this T&R Manual. Units should train under CBRNE conditions whenever possible. Per reference (c), all units must be capable of accomplishing their assigned mission in a contaminated environment.

#### **1011. NIGHT TRAINING**

1. While it is understood that all personnel and units of the operating force are capable of performing their assigned mission in "every climate and place," current doctrine emphasizes the requirement to perform assigned missions at night and during periods of limited visibility. Basic skills are significantly more difficult when visibility is limited.

2. To ensure units are capable of accomplishing their mission they must train under the conditions of limited visibility. Units should strive to conduct all events in this T&R Manual during both day and night/limited visibility conditions. When there is limited training time available, night training should take precedence over daylight training, contingent on individual, crew, and unit proficiency.

#### **1012. OPERATIONAL RISK MANAGEMENT (ORM)**

1. ORM is a process that enables commanders to plan for and minimize risk while still accomplishing the mission. It is a decision making tool used by Marines at all levels to increase operational effectiveness by anticipating hazards and reducing the potential for loss, thereby increasing the probability of a successful mission. ORM minimizes risks to acceptable levels, commensurate with mission accomplishment.

2. Commanders, leaders, maintainers, planners, and schedulers will integrate risk assessment in the decision-making process and implement hazard controls to reduce risk to acceptable levels. Applying the ORM process will reduce mishaps, lower costs, and provide for more efficient use of resources. ORM assists the commander in conserving lives and resources and avoiding unnecessary risk, making an informed decision to implement a course of action (COA), identifying feasible and effective control measures where specific measures do not exist, and providing reasonable alternatives for mission accomplishment. Most importantly, ORM assists the commander in determining the balance between training realism and unnecessary risks in training, the impact of training operations on the environment, and the adjustment of training plans to fit the level of proficiency and experience of

Sailors/Marines and leaders. Further guidance for ORM is found in references (b) and (d).

#### **1013. APPLICATION OF SIMULATION**

1. Simulations/Simulators and other training devices shall be used when they are capable of effectively and economically supplementing training on the identified training task. Particular emphasis shall be placed on simulators that provide training that might be limited by safety considerations or constraints on training space, time, or other resources. When deciding on simulation issues, the primary consideration shall be improving the quality of training and consequently the state of readiness. Potential savings in operating and support costs normally shall be an important secondary consideration.

2. Each training event contains information relating to the applicability of simulation. If simulator training applies to the event, then the applicable simulator(s) is/are listed in the "Simulation" section and the CRP for simulation training is given. This simulation training can either be used in place of live training, at the reduced CRP indicated; or can be used as a precursor training for the live event, i.e., weapons simulators, convoy trainers, observed fire trainers, etc. It is recommended that tasks be performed by simulation prior to being performed in a live-fire environment. However, in the case where simulation is used as a precursor for the live event, then the unit will receive credit for the live event CRP only. If a tactical situation develops that precludes performing the live event, the unit would then receive credit for the simulation CRP.

#### **1014. MARINE CORPS GROUND T&R PROGRAM**

1. The Marine Corps Ground T&R Program continues to evolve. The vision for Ground T&R Program is to publish a T&R Manual for every readiness-reporting unit so that core capability METs are clearly defined with supporting collective training standards, and to publish community-based T&R Manuals for all occupational fields whose personnel augment other units to increase their combat and/or logistic capabilities. The vision for this program includes plans to provide a Marine Corps training management information system that enables tracking of unit and individual training accomplishments by unit commanders and small unit leaders, automatically computing CRP for both units and individual Marines based upon MOS and rank (or billet). Linkage of T&R Events to the Marine Corps Task List (MCTL), through the core capability METs, has enabled objective assessment of training readiness in the DRRS.

2. DRRS measures and reports on the readiness of military forces and the supporting infrastructure to meet missions and goals assigned by the Secretary of Defense. With unit CRP based on the unit's training toward its METs, the CRP will provide a more accurate picture of a unit's readiness. This will give fidelity to future funding requests and factor into the allocation of resources. Additionally, the Ground T&R Program will help to ensure training remains focused on mission accomplishment and that training readiness reporting is tied to units' METLs.



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CHAPTER 2

MISSION ESSENTIAL TASKS MATRIX

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ENG & UTIL T&R MANUAL

CHAPTER 2

MISSION ESSENTIAL TASKS MATRIX

**2000. COMBAT ENGINEER BATTALION CORE MISSION ESSENTIAL TASK LIST.** The Combat Engineer Battalion Mission Essential Task List (METL) Table lists the Standardized Core Mission Essential Task list, derived from the Marine Corps Task List, for the Combat Engineer Battalion. This METL is used for readiness reporting in the Defense Readiness Reporting System (DRRS) and is reflected in the T&R METL.

**CEB CORE MISSION ESSENTIAL TASK**

MARINE CORPS TASK LIST 2.0B DRAFT	CEB CORE METL
MCT 1.1	Provide Forces
MCT 1.4.1	Conduct Mobility Operations
MCT 1.5	Conduct Counter-Mobility Operations
MCT 4.4.1	Provide and Maintain Engineering Reconnaissance Operations
MCT 4.4.9	Conduct Tactical Electrical Supply
MCT 6.1.4	Conduct Survivability Operations

**2001. ENGINEER SUPPORT BATTALION CORE MISSION ESSENTIAL TASK LIST.** The Engineer Support Battalion Mission Essential Task List (METL) Table lists the Standardized Core Mission Essential Task list, derived from the Marine Corps Task List, for the Engineer Support Battalion. This METL is used for readiness reporting in the Defense Readiness Reporting System (DRRS) and is reflected in the T&R METL.

**ESB CORE MISSION ESSENTIAL TASK**

MARINE CORPS TASK LIST 2.0B DRAFT	ESB CORE METL
MCT 1.1	Provide Forces
MCT 1.4.1	Conduct Mobility Operations
MCT 4.4	Conduct General Engineering Operations
MCT 4.4.7	Conduct Tactical Water and/or Hygiene Service
MCT 4.4.8	Conduct Tactical Bulk Fuel Storage
MCT 4.4.9	Conduct Tactical Electrical Supply
MCT 6.1.4	Conduct Survivability Operations
MCT 6.3.4	Render safe, neutralize and destroy explosive ordnance, Improvised Explosive Devices (IED), & Chemical, Biological, Radiological / Nuclear (CBRN) devices

**2002. ENGINEER AND UTILITIES MISSION ESSENTIAL TASKS MATRIX.** The Engineer and Utilities T&R Mission Essential Task List (METL) reflect the tasks in the ESB and CEB Core METL. The Engineer and Utilities METL Table includes the designated MET number. The following event codes are the linked evaluation coded (E- Coded) events that support the MET.

**MET#/MISSION ESSENTIAL TASK**

<b>MET 1. PROVIDE FORCES</b>	
ENGR-XENG-7904	Provide Task Organized Forces
<b>MET 2. CONDUCT MOBILITY OPERATIONS</b>	
ENGR-MOBL-7902	Conduct mobility operations
ENGR-MOBL-6805	Conduct obstacle breaching operations
ENGR-MOBL-6806	Conduct route clearance operations
ENGR-MOBL-6703	Conduct gap crossing operations
ENGR-MOBL-6909	Conduct mobility operations
ENGR-MOBL-5715	Conduct gap crossing operations
ENGR-MOBL-5803	Conduct route clearance operations
ENGR-MOBL-5805	Conduct obstacle breaching operations
ENGR-MOBL-4702	Conduct gap crossing operations
ENGR-MOBL-4801	Conduct obstacle breaching operations
ENGR-MOBL-4802	Breach obstacle(s) in support of maneuver
ENGR-MOBL-4806	Conduct route clearance operations
ENGR-MOBL-3801	Engage Targets with Mk153 SMAW
ENGR-MOBL-3802	Conduct obstacle breaching operations
ENGR-MOBL-3804	Conduct obstacle breaching operations with Assault Breacher Vehicle (ABV)
ENGR-MOBL-3805	Conduct route clearance operations
ENGR-MOBL-3807	Conduct gap crossing operations with Joint Assault Bridge (JAB)
<b>MET 3. CONDUCT COUNTER-MOBILITY OPERATIONS</b>	
ENGR-CMOB-7801	Conduct Countermobility operations
ENGR-CMOB-6807	Conduct countermobility operations
<b>MET 4. CONDUCT GENERAL ENGINEERING OPERATIONS</b>	
ENGR-XENG-7703	Conduct General Engineering Operations
ENGR-XENG-6708	Conduct General Engineering Operations
<b>MET 5. PROVIDE AND MAINTAIN ENGINEERING RECONNAISSANCE OPERATIONS</b>	
ENGR-RECN-7905	Coordinate Engineer Forces in Support of Reconnaissance Operations
ENGR-RECN-6903	Conduct Route Reconnaissance
ENGR-RECN-6904	Conduct Area Reconnaissance
ENGR-RECN-6905	Conduct Zone Reconnaissance
ENGR-RECN-6908	Coordinate Engineer Forces in Support of Reconnaissance Operations
ENGR-RECN-5909	Conduct Zone Reconnaissance
ENGR-RECN-5911	Conduct Route Reconnaissance

ENGR-RECN-5913	Coordinate Engineer Forces in Support of Reconnaissance Operations
ENGR-RECN-5914	Conduct Area Reconnaissance
ENGR-RECN-4904	Conduct Zone Reconnaissance
ENGR-RECN-4905	Conduct Route Reconnaissance
ENGR-RECN-4906	Conduct Area Reconnaissance
ENGR-RECN-3904	Conduct Area Reconnaissance
ENGR-RECN-3905	Conduct Route Reconnaissance
ENGR-RECN-3906	Conduct Zone Reconnaissance
<b>MET 6. CONDUCT TACTICAL WATER AND/OR HYGIENE SERVICE</b>	
UTIL-XENG-7703	Provide Tactical Water/Hygiene Services
UTIL-XENG-6714	Provide Tactical Water/Hygiene Services
<b>MET 7. CONDUCT TACTICAL BULK FUEL STORAGE</b>	
FUEL-XENG-7704	Conduct Tactical Bulk Petroleum Operations
FUEL-XENG-6709	Coordinate Bulk Petroleum Operations
FUEL-XENG-6712	Conduct Tactical Bulk Petroleum Operations
<b>MET 8. CONDUCT TACTICAL ELECTRICAL SUPPLY</b>	
UTIL-XENG-7901	Provide Tactical Electrical Supply
UTIL-XENG-6911	Provide Tactical Electrical Supply
<b>MET 9. CONDUCT SURVIVABILITY OPERATIONS</b>	
ENGR-SURV-7901	Conduct Base Defense
ENGR-SURV-7903	Conduct Survivability Operations
ENGR-SURV-6906	Conduct Base Defense
ENGR-SURV-6907	Construct Survivability Positions
ENGR-SURV-6910	Conduct Survivability Operations
ENGR-SURV-5915	Construct Survivability Positions
ENGR-SURV-5916	Conduct Base Defense
ENGR-SURV-5917	Conduct Survivability Operations
ENGR-SURV-4907	Conduct Survivability Operations
ENGR-SURV-4910	Conduct Base Defense
ENGR-SURV-4911	Construct Survivability Positions
ENGR-SURV-3907	Construct Survivability Positions
ENGR-SURV-3908	Conduct Survivability Operations
<b>MET 10. RENDER SAFE, NEUTRALIZE AND DESTROY EXPLOSIVE ORDNANCE, IMPROVISED EXPLOSIVE DEVICES (IED), &amp; CHEMICAL, BIOLOGICAL, RADIOLOGICAL / NUCLEAR (CBRN) DEVICES</b>	
ENGR-DEMO-7702	Provide EOD Support

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CHAPTER 3

COLLECTIVE EVENTS

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CHAPTER 3

COLLECTIVE EVENTS

**3000. PURPOSE.** This chapter includes all collective training events for Engineer and Utilities. A collective event is an event that a trained Engineer Unit would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailor's individual and collective training for the selected MET. Each event is composed of a collective event title, event description, condition, and standard. Accomplishment and proficiency level required is determined by the event standard.

**3001. EVENT CODING.** Collective T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier.

a. The first four characters represent the community:

ENGR - Engineer  
UTIL - Utilities  
FUEL - Bulk Fuel

b. The second four characters represent the functional or duty area. This chapter contains the duty areas listed below. See Appendix A for a complete list of functional areas.

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

c. The first of the last four characters represent the level (7000 or 5000) and the last three characters the sequence (7001, 5002) of the event with the hundreds column (9xx, 8xx, 7xx) identifying the unit to which an E-Coded event applies (see Sect 1006). The Engineer and Utilities collective training events are captured in the 7000 (Battalion) through 3000 (Team) Level.

**3002. INDEX OF COLLECTIVE EVENTS**

EVENT	E-CODE	DESCRIPTION	PAGE
		<b>7000-Level Training Events</b>	
ENGR-SURV-7701	NO	Conduct Passive Security	3-7
ENGR-DEMO-7702	YES	Provide EOD Support	3-8
UTIL-XENG-7703	YES	Provide Tactical Water/Hygiene Services	3-10
ENGR-XENG-7704	YES	Conduct General Engineering Operations	3-8
FUEL-XENG-7705	YES	Conduct Tactical Bulk Petroleum Operations	3-11
ENGR-CMOB-7801	YES	Conduct Countermobility operations	3-12
UTIL-XENG-7901	YES	Provide Tactical Electrical Supply	3-13
ENGR-SURV-7902	YES	Conduct Base Defense	3-12
ENGR-MOBL-7903	YES	Conduct mobility operations	3-14
ENGR-SURV-7904	YES	Conduct Survivability Operations	3-15
ENGR-XENG-7905	YES	Provide Task Organized Forces	3-16
ENGR-RECN-7906	YES	Coordinate Engineer Forces in Support of Reconnaissance Operations	3-16
		<b>6000-Level Training Events</b>	
ENGR-MOBL-6701	NO	Create expeditionary roads and trails	3-18
ENGR-MOBL-6702	NO	Conduct breach lane improvement operations	3-18
ENGR-MOBL-6703	YES	Conduct gap crossing operations	3-19
ENGR-SURV-6704	NO	Conduct Passive Security	3-20
ENGR-XENG-6705	NO	Conduct vertical construction	3-21
ENGR-XENG-6706	NO	Conduct demolition and obstacle removal	3-22
ENGR-XENG-6707	NO	Conduct horizontal construction	3-23
ENGR-XENG-6708	YES	Conduct General Engineering Operations	3-24
FUEL-XENG-6709	YES	Coordinate Bulk Petroleum Operations	3-25
FUEL-XENG-6710	NO	Receive Petroleum Product	3-26
FUEL-XENG-6711	NO	Provide Tactical Bulk Petroleum Storage	3-26
FUEL-XENG-6712	YES	Conduct Tactical Bulk Petroleum Operations	3-27
FUEL-XENG-6713	NO	Establish a Petroleum Dispensing Point	3-27
UTIL-XENG-6714	YES	Provide Tactical Water/Hygiene Services	3-28
ENGR-DEMO-6801	NO	Direct demolition operations	3-29
ENGR-DEMO-6802	NO	Plan demolition operations	3-30
ENGR-DEMO-6803	NO	Coordinate demolition operations	3-30
ENGR-MOBL-6804	NO	Conduct area clearance operations	3-31
ENGR-MOBL-6805	YES	Conduct obstacle breaching operations	3-31
ENGR-MOBL-6806	YES	Conduct route clearance operations	3-32
ENGR-CMOB-6807	YES	Conduct countermobility operations	3-33
ENGR-CMOB-6901	NO	Create obstacles and barriers	3-33
ENGR-MOBL-6902	NO	Conduct construction on tactical landing zones	3-34
ENGR-RECN-6903	YES	Conduct Route Reconnaissance	3-35
ENGR-RECN-6904	YES	Conduct Area Reconnaissance	3-36
ENGR-RECN-6905	YES	Conduct Zone Reconnaissance	3-36
ENGR-SURV-6906	YES	Conduct Base Defense	3-37
ENGR-SURV-6907	YES	Construct Survivability Positions	3-38
ENGR-RECN-6908	YES	Coordinate Engineer Forces in Support of Reconnaissance Operations	3-39

ENGR-MOBL-6909	YES	Conduct mobility operations	3-39
ENGR-SURV-6910	YES	Conduct Survivability Operations	3-40
UTIL-XENG-6911	YES	Provide Tactical Electrical Supply	3-41
		<b>5000-Level Training Events</b>	
ENGR-MOBL-5701	NO	Install a Medium Girder Bridge	3-43
FUEL-XENG-5702	NO	Coordinate Bulk Petroleum Operations	3-43
ENGR-MOBL-5703	NO	Assemble a Ribbon Raft	3-44
UTIL-XENG-5704	NO	Provide Potable Water	3-44
FUEL-XENG-5705	NO	Identify Fuel Testing Requirements	3-45
ENGR-MOBL-5706	NO	Create expeditionary roads and trails	3-45
UTIL-XENG-5707	NO	Provide Hygiene Support	3-46
FUEL-XENG-5708	NO	Direct Bulk Petroleum Site Construction	3-47
ENGR-MOBL-5709	NO	Conduct breach lane improvement operations	3-47
UTIL-XENG-5710	NO	Provide Environmental Control Unit (ECU) Support	3-48
FUEL-XENG-5711	NO	Employ Bulk Petroleum Distribution Systems	3-48
ENGR-MOBL-5712	NO	Install Ribbon Bridge	3-49
UTIL-XENG-5713	NO	Provide Refrigeration Support	3-49
FUEL-XENG-5714	NO	Receive Petroleum Product	3-50
ENGR-MOBL-5715	YES	Conduct gap crossing operations	3-50
FUEL-XENG-5716	NO	Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage	3-51
ENGR-SURV-5717	NO	Conduct Passive Security	3-52
FUEL-XENG-5718	NO	Provide Tactical Bulk Petroleum Storage	3-52
ENGR-XENG-5719	NO	Conduct demolition and obstacle removal	3-53
FUEL-XENG-5720	NO	Conduct Tactical Bulk Petroleum Operations	3-54
ENGR-XENG-5721	NO	Conduct horizontal construction	3-54
ENGR-XENG-5722	NO	Conduct vertical construction	3-55
ENGR-XENG-5723	NO	Conduct General Engineering Operations	3-57
ENGR-DEMO-5801	NO	Conduct demolitions in support of mobility operations	3-58
ENGR-DEMO-5802	NO	Conduct demolitions in support of counter mobility operations	3-59
ENGR-MOBL-5803	YES	Conduct route clearance operations	3-59
ENGR-MOBL-5804	NO	Conduct area clearance operations	3-60
ENGR-MOBL-5805	YES	Conduct obstacle breaching operations	3-60
ENGR-MOBL-5806	NO	Conduct Route Sweep Operations	3-61
ENGR-CMOB-5901	NO	Create obstacles and barriers	3-62
UTIL-XENG-5902	NO	Provide Tactical Electrical Power	3-63
ENGR-CMOB-5903	NO	Conduct counter mobility operations	3-64
ENGR-DEMO-5904	NO	Conduct demolitions in support of survivability operations	3-65
ENGR-DEMO-5905	NO	Conduct demolitions in support of expeditionary operations	3-65
ENGR-MOBL-5906	NO	Conduct construction of tactical landing zones	3-66
ENGR-MOBL-5907	NO	Conduct mobility operations	3-67
UTIL-XENG-5908	NO	Provide floodlight support	3-67
ENGR-RECN-5909	YES	Conduct Zone Reconnaissance	3-68
UTIL-XENG-5910	NO	Maintain utilities equipment	3-69
ENGR-RECN-5911	YES	Conduct Route Reconnaissance	3-73
UTIL-XENG-5912	NO	Provide licensing program for utilities	3-74



		equipment	
ENGR-RECN-5913	YES	Coordinate Engineer Forces in Support of Reconnaissance Operations	3-74
ENGR-RECN-5914	YES	Conduct Area Reconnaissance	3-75
ENGR-SURV-5915	YES	Construct Survivability Positions	3-75
ENGR-SURV-5916	YES	Conduct Base Defense	3-76
ENGR-SURV-5917	YES	Conduct Survivability Operations	3-77
		<b>4000-Level Training Events</b>	
ENGR-MOBL-4701	NO	Repair runway/ LZ operating surfaces	3-79
ENGR-MOBL-4702	YES	Conduct gap crossing operations	3-79
ENGR-XENG-4703	NO	Conduct vertical construction	3-80
ENGR-XENG-4704	NO	Conduct horizontal construction	3-82
ENGR-MOBL-4705	NO	Maneuver a Standard Military Ribbon Raft	3-83
ENGR-SURV-4706	NO	Conduct Passive Security	3-83
ENGR-XENG-4707	NO	Conduct General Engineering Operations	3-84
UTIL-XENG-4708	NO	Produce Potable Water	3-86
UTIL-XENG-4709	NO	Store Potable Water	3-86
UTIL-XENG-4710	NO	Maintain Tactical Water Purification Systems	3-87
UTIL-XENG-4711	NO	Maintain Hygiene Equipment	3-89
UTIL-XENG-4712	NO	Maintain Environmental Control Units	3-90
UTIL-XENG-4713	NO	Maintain Refrigeration Systems	3-92
FUEL-XENG-4714	NO	Identify Fuel Testing Requirements	3-94
FUEL-XENG-4715	NO	Coordinate Bulk Petroleum Operations	3-94
FUEL-XENG-4716	NO	Direct Bulk Petroleum Site Construction	3-95
FUEL-XENG-4717	NO	Employ Bulk Petroleum Distribution Systems	3-95
FUEL-XENG-4718	NO	Receive Petroleum Product	3-96
FUEL-XENG-4719	NO	Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage	3-96
FUEL-XENG-4720	NO	Provide Tactical Bulk Petroleum Storage	3-96
FUEL-XENG-4721	NO	Conduct Tactical Bulk Petroleum Operations	3-97
FUEL-XENG-4722	NO	Establish a Petroleum Dispensing Point	3-97
ENGR-MOBL-4801	YES	Conduct obstacle breaching operations	3-98
ENGR-MOBL-4802	YES	Breach obstacle(s) in support of maneuver	3-99
ENGR-MOBL-4803	NO	Conduct Route Sweep Operations	3-99
ENGR-MOBL-4804	NO	Conduct area clearance operations	3-100
ENGR-MOBL-4805	NO	Conduct Urban Breaching Operations	3-101
ENGR-MOBL-4806	YES	Conduct route clearance operations	3-101
ENGR-CMOB-4901	NO	Conduct countermobility operations	3-102
ENGR-MOBL-4902	NO	Conduct mobility operations	3-103
ENGR-MOBL-4903	NO	Conduct construction of tactical landing zones	3-103
ENGR-RECN-4904	YES	Conduct Zone Reconnaissance	3-104
ENGR-RECN-4905	YES	Conduct Route Reconnaissance	3-105
ENGR-RECN-4906	YES	Conduct Area Reconnaissance	3-106
ENGR-SURV-4907	YES	Conduct Survivability Operations	3-106
ENGR-XENG-4908	NO	Conduct demolition and obstacle removal	3-107
ENGR-CMOB-4909	NO	Create obstacles and barriers	3-108
ENGR-SURV-4910	YES	Conduct Base Defense	3-109
ENGR-SURV-4911	YES	Construct Survivability Positions	3-110
UTIL-XENG-4912	NO	Establish Tactical Power Distribution System	3-111
UTIL-XENG-4913	NO	Maintain Tactical Power Distribution System	3-111
UTIL-XENG-4914	NO	Maintain Utilities Electrical Equipment	3-113

		<b>3000-Level Training Events</b>	
ENGR-MOBL-3701	NO	Conduct gap crossing operations	3-116
ENGR-XENG-3702	NO	Conduct General Engineering Operations	3-117
ENGR-XENG-3703	NO	Conduct vertical construction	3-118
ENGR-XENG-3704	NO	Conduct demolition and obstacle removal	3-119
UTIL-XENG-3705	NO	Produce Potable Water	3-120
UTIL-XENG-3706	NO	Store Potable Water	3-121
UTIL-XENG-3707	NO	Maintain Tactical Water Purification Systems	3-122
UTIL-XENG-3708	NO	Maintain Hygiene Equipment	3-124
UTIL-XENG-3709	NO	Maintain Environmental Control Units	3-125
UTIL-XENG-3710	NO	Maintain Refrigeration Systems	3-127
FUEL-XENG-3711	NO	Coordinate Bulk Petroleum Operations	3-128
FUEL-XENG-3712	NO	Identify Fuel Testing Requirements	3-129
FUEL-XENG-3713	NO	Direct Bulk Petroleum Site Construction	3-129
FUEL-XENG-3714	NO	Employ Bulk Petroleum Distribution Systems	3-130
FUEL-XENG-3715	NO	Receive Petroleum Product	3-130
FUEL-XENG-3716	NO	Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage	3-130
FUEL-XENG-3717	NO	Provide Tactical Bulk Petroleum Storage	3-131
FUEL-XENG-3718	NO	Establish a Petroleum Dispensing Point	3-131
FUEL-XENG-3719	NO	Conduct Tactical Bulk Petroleum Operations	3-132
ENGR-MOBL-3801	YES	Engage Targets with Mk153 SMAW	3-132
ENGR-MOBL-3802	YES	Conduct obstacle breaching operations	3-133
ENGR-MOBL-3803	NO	Conduct area clearance operations	3-134
ENGR-MOBL-3804	YES	Conduct obstacle breaching operations with Assault Breacher Vehicle (ABV)	3-134
ENGR-MOBL-3805	YES	Conduct route clearance operations	3-135
ENGR-MOBL-3806	NO	Conduct Urban Breaching Operations	3-136
ENGR-MOBL-3807	YES	Conduct gap crossing operations with Joint Assault Bridge (JAB)	3-136
ENGR-CMOB-3901	NO	Create obstacles and barriers	3-137
ENGR-CMOB-3902	NO	Conduct countermobility operations	3-138
ENGR-MOBL-3903	NO	Conduct mobility operations	3-139
ENGR-RECN-3904	YES	Conduct Area Reconnaissance	3-140
ENGR-RECN-3905	YES	Conduct Route Reconnaissance	3-140
ENGR-RECN-3906	YES	Conduct Zone Reconnaissance	3-141
ENGR-SURV-3907	YES	Construct Survivability Positions	3-142
ENGR-SURV-3908	YES	Conduct Survivability Operations	3-143
UTIL-XENG-3909	NO	Establish Tactical Power Distribution System	3-144
UTIL-XENG-3910	NO	Maintain Tactical Power Distribution System	3-144
UTIL-XENG-3911	NO	Maintain utilities electrical equipment	3-145

**3003. 7000-LEVEL TRAINING EVENTS**

**ENGR-SURV-7701:** Conduct passive security

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Measures include but are not limited to; camouflage, dispersion, hardening installations, concealment, deception, reconstitution, redundancy, detection and warning systems, protective construction, use of natural cover, etc.

**CONDITION:** Given a mission, commanders' intent, a map, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To conduct passive rear area or air defense security measures taken to minimize the effectiveness of hostile air/ground or missile threats against friendly forces or assets.

**REFERENCES:**

1. FM 20-3 Camouflage
  2. FM 20-32 Mine/Countermining Operations
  3. FM 21-75 Combat Skills of the Soldier
  4. FM 3-06 Urban Operations
  5. FM 3-07 Stability Operations and Support Operations
  6. FM 5-100 Engineers in Combat Operations
  7. FM 5-102 Countermobility
  8. FM 5-103 Field Fortifications
  9. FM 5-103 Survivability
  10. FM 5-170 Engineer Reconnaissance
  11. FM 5-250 Explosives and Demolitions
  12. FM 5-34 Engineering Field Data
  13. FM 5-36 Route Reconnaissance and Classification
  14. FM 5-412 Project Management
  15. FM 5-426 Carpentry
  16. FM 5-434 Earthmoving Operations
  17. FM 90-3 Desert Operations
  18. FM 90-5 Jungle Operations
  19. FMFM 13 MAGTF Engineer Operations
  20. FMFM 4-4 Engineer Operations
  21. FMFRP 12-51 Engineer Operations
  22. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  23. JP 3-34 Engineer Doctrine for Joint Operations
  24. MCWP 3-1 Ground Combat Operations
  25. MCWP 3-17 Engineer Operations
  26. MCWP 3-35.3 Military Operations on Urbanized Terrain
  27. MCWP 3-35.5 Jungle Operations
  28. MCWP 3-35.6 Desert Operations
  29. MCWP 3-41.1 Rear Area Operations
  30. MCWP 4-11 Combat Service Support
-

**ENGR-EOD-7702:** Provide EOD Support

**SUPPORTED MET(S):** 10

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** EOD support is that support provided by qualified EOD Personnel resident in the Engineer Support Battalion. This task is not performed by the 13xx or 11xx and is governed by the Explosive Ordnance Disposal T&R Manual.

**CONDITION:** Given an EOD mission, necessary equipment and personnel

**STANDARD:** To ensure explosive hazards have no adverse impact on movement/maneuver/force protection within an operating area.

**REFERENCES:**

1. NAVMC DIR 3500.78 Explosive Ordnance Disposal T&R Manual
- 

**ENGR-XENG-7704:** Conduct general engineering operations

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct General Engineering Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required general engineering operations.

**CONDITION:** Given a mission, commanders intent, available resources, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms plan and security element.

**STANDARD:** To ensure general engineering support of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. FM 100-10 Combat Service Support
5. FM 100-23-1 Humanitarian Assistance Operations
6. FM 20-3 Camouflage
7. FM 20-31 Electric Power Generation in the Field
8. FM 21-10 Field Hygiene and Sanitation
9. FM 21-10-1 Unit Field Sanitation
10. FM 21-75 Combat Skills of the Soldier
11. FM 3-06 Urban Operations
12. FM 3-07 Stability Operations and Support Operations
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-100 Engineers in Combat Operations
15. FM 5-101-5-1 Operational Terrain and Symbols

16. FM 5-103 Field Fortifications
  17. FM 5-103 Survivability
  18. FM 5-163 Sewerage
  19. FM 5-335 Drainage
  20. FM 5-34 Engineering Field Data
  21. FM 5-412 Project Management
  22. FM 5-422 Engineer Prime Power Operations
  23. FM 5-424 Theater of Operations Electrical Systems
  24. FM 5-426 Carpentry
  25. FM 5-428 Concrete Masonry
  26. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  27. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  28. FM 5-434 Earthmoving Operations
  29. FM 5-446 Military Non-Standard Fixed Bridges
  30. FM 5-553 General Drafting
  31. FM 90-3 Desert Operations
  32. FM 90-5 Jungle Operations
  33. FMFM 13 MAGTF Engineer Operations
  34. FMFM 3-1 Command and Staff Action
  35. FMFM 4-4 Engineer Operations
  36. FMFRP 0-55 Desert Water Supply
  37. FMFRP 12-51 Engineer Operations
  38. GTA 5-7-13 Bridge Classification Booklet
  39. GTA 5-7-6 Bridge Design Card
  40. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  41. JP 3-34 Engineer Doctrine for Joint Operations
  42. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
  43. MCRP 3-17A Engineer Field Data
  44. MCRP 3-17B Engineer Forms and Reports
  45. MCRP 4-11.1D Field Hygiene and Sanitation
  46. MCRP 4-11B Environmental Considerations in Military Operations
  47. MCWP 3-1 Ground Combat Operations
  48. MCWP 3-17 Engineer Operations
  49. MCWP 3-35.1 Cold Weather Operations
  50. MCWP 3-35.2 Mountain Operations
  51. MCWP 3-35.3 Military Operations on Urbanized Terrain
  52. MCWP 3-35.5 Jungle Operations
  53. MCWP 3-35.6 Desert Operations
  54. MCWP 3-41.1 Rear Area Operations
  55. MCWP 3.21.1 Aviation Ground Support
  56. MCWP 4-1 Logistics Operations
  57. MCWP 4-11 Combat Service Support
  58. MCWP 4-11.3 Transportation Operations
  59. MCWP 4-11.4 Maintenance Operations
  60. MCWP 4-11.6 Bulk Liquid Operations
  61. MCWP 4-24 Commander's Guide to Maintenance
  62. MCWP 4-25.5 Bulk Liquids Operations
  63. MCWP 4-6 MAGTF Supply Operations
  64. MCWP 5-1 Marine Corps Planning Process
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**UTIL-XENG-7703:** Provide Tactical Water/Hygiene Services

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a operational order and required personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 49 CFR 172.704(a) (3) Hazardous Material Regulations
3. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
4. EM 0077 Water Purification, Supply, and Related Equipment.
5. EM 0086 Generator Sets and Power Units (CD-ROM)
6. EM 0127 Laundry, Bath, and Hygiene Equipment
7. FM 10-52 Water Supply in Theaters of Operation
8. FM 10-52-1 Water Supply Point Equipment and Operations
9. FM 100-14 Risk Management
10. FM 20-3 Camouflage
11. FM 21-10 Field Hygiene and Sanitation
12. FM 21-10-1 Unit Field Sanitation
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-163 Sewerage
15. FM 5-335 Drainage
16. FMFM 4-4 Engineer Operations
17. FMFRP 0-55 Desert Water Supply
18. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
19. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
20. MCO 3500.27B Operational Risk Management
21. MCO 4610.35 USMC Equipment Characteristics File
22. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
23. MCO 5100.29 Marine Corps Safety Program
24. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
25. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
26. MCO P5090.2A Environmental Compliance and Protection Manual
27. MCRP 3-02G First Aid
28. MCWP 4-11.6 Bulk Liquid Operations
29. NAVMED P-5010 Navy Sanitation
30. SL-3 06996C w/ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
31. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
32. SL-3 86702D w/ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
33. SL-3 86702F w/ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
34. SL-3 8D486B Pump Assembly 350 GPM
35. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
36. SL-3-09467A Pump Assembly, Centrifugal
37. SL-4-08922C Pump Unit 125 GPM
38. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
39. TC 11-6 Grounding Techniques
40. TM 01034D-12/P1 3000 Gallon Tank
41. TM 01034D/1 Tank, Fabric, Self Supporting
42. TM 01243E-14/1 Laundry Facility, Bare Base
43. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM

44. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
45. TM 08936A-13&P Forward Area Water Point Supply System
46. TM 08936A-13&P Forward Area Water Point Supply System
47. TM 08990A-15&P/1 Sixcon Water Tank Module
48. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
49. TM 09777A-14/1 Water Purification Systems
50. TM 10-4320-226-14 350 GPM Pump
51. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
52. TM 10-4320-343-14 350 GPM Pump
53. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
54. TM 10006A-14/P1 Shower Facility, Bare Base
55. TM 10596A-13&P Marine Corps Hose Reel System
56. TM 10802A-14/1 Tactical Water Purification System
57. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
58. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
59. TM 5-4320-303-10 600 GPM Pump
60. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
61. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
62. TM 9406-15 Grounding Procedures
63. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM
64. UM-PLMS Publications Library Management System

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**FUEL-XENG-7705:** Conduct Tactical Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Conduct Tactical Bulk Petroleum Operations.

**CONDITION:** Given an operations order, fuel distribution plan, required equipment, materials, personnel, and references.

**STANDARD:** To ensure all using units receive fuel within the time frame set by higher headquarters per the operations order.

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-68 Aircraft Refueling
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
5. MCO 3500.27B Operational Risk Management
6. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
7. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
8. MCRP 3-02G First Aid
9. MCWP 4-11 Combat Service Support
10. MCWP 4-11.6 Bulk Liquid Operations
11. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
12. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
13. TM 4700-15/1H Ground Equipment Record Procedures
14. ULSS-00 3089-15 TPLM
15. UM 4400-15 Marine Corps User Manual (Organic Property Control)

- 16. UM 4790-5 Users Manual MIMMS
- 17. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

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**ENGR-CMOB-7801:** Conduct countermobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Conduct countermobility planning.
2. Integrate countermobility plan with the concept of operations.
3. Participate in supported unit planning.
4. Complete the engineering portions of the orders
5. Identify what organic and nonorganic units are completing each task
6. Develop engineer estimate of supportability.
7. Issue warning orders to subordinate units

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 90-1 Countermobility
7. FM 90-7 Combined Arms Obstacle Integration
8. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17B Engineer Forms and Reports

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**ENGR-SURV-7902:** Conduct base defense

**SUPPORTED MET(S):** 3, 4, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Includes but is not limited to; mutually supporting bunkers, fighting positions, non-explosive and explosive obstacles, vehicle defilades, ECP/VCP's, berms/barriers, HN support, communications, warning systems, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, force protection plan, task organization of personnel and equipment, and references.



**STANDARD:** To employ positions, obstacles, barriers, and procedures that mitigate the risk of injury to friendly forces from enemy actions in accordance with the commanders intent and concept of operations.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 5-103 Survivability
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**UTIL-XENG-7901:** Provide Tactical Electrical Supply

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a operation order and required personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
4. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
5. EM 0086 Generator Sets and Power Units (CD-ROM)
6. EM 0158 Power Supplies, Light Sets, and Battery Chargers
7. EM 0180 Warranties
8. EMC Electric Motor Controls by American Technical Publishers, Inc.
9. EMR Electric Motor Repair, Third Addition
10. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
11. FM 100-10 Combat Service Support
12. FM 100-14 Risk Management
13. FM 100-23-1 Humanitarian Assistance Operations
14. FM 20-3 Camouflage
15. FM 20-31 Electric Power Generation in the Field
16. FMFM 13 MAGTF Engineer Operations
17. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)

18. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
19. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
20. MCO 3500.27B Operational Risk Management
21. MCO 5100.29 Marine Corps Safety Program
22. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
23. SL-3-01204A Components List for Tool Kit, Lineman (Mar 98), w/Ch 1 (Apr99)
24. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
25. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
26. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
27. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
28. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
29. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
30. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
31. TM 06858B/06859D-12 MEP-5 Generator Set
32. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
33. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
34. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
35. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
36. National Electrical Code
37. Wiring Diagrams

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**ENGR-MOBL-7903:** Conduct mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Includes breaching, route/area clearance, route maintenance/construction, airfield/LZ maintenance/repair/construction, gap crossing, etc.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, and defined area of operations, routes rules of engagement and supporting arms from the high water mark inland.

**STANDARD:** To ensure mobility of the supported unit and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Maintain organic reserve forces.
2. Issue the order.
3. Orchestrate the execution of mobility operations.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment
22. TM 9-1300-214 Military Explosives
23. UNIT SOP Unit's Standing Operating Procedures

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**ENGR-SURV-7904:** Conduct survivability operations

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct Survivability Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required survivability operation.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To ensure survivability of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-103 Field Fortifications
4. FM 5-103 Survivability
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-335 Drainage
8. FM 5-34 Engineer Field Data - Field Expedient Charges
9. FM 5-412 Project Management
10. FM 5-426 Carpentry
11. FM 5-428 Concrete Masonry
12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
14. FM 5-434 Earthmoving Operations
15. FM 5-446 Military Non-Standard Fixed Bridges
16. FM 5-553 General Drafting
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FM 90-7 Combined Arms Obstacle Integration
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 3-1 Command and Staff Action
22. FMFM 4-4 Engineer Operations
23. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
24. JP 3-34 Engineer Doctrine for Joint Operations
25. MCRP 3-17A Engineer Field Data
26. MCRP 3-17B Engineer Forms and Reports
27. MCWP 4-11 Combat Service Support

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**ENGR-XENG-7905:** Provide task organized forces

**SUPPORTED MET(S):** 1

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a requirement, 90% of the required company and 80% of each required critical end item

**STANDARD:** To ensure a deployable detachment is capable of providing task-organized forces to the supported unit.

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**ENGR-REC-7906:** Coordinate engineer forces in support of reconnaissance operations

**SUPPORTED MET(S):** 3, 5

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given commanders intent, operations order, and available resources

**STANDARD:** To task engineer forces to conduct/support engineer reconnaissance missions in accordance with the commanders intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-170 Engineer Reconnaissance
  3. FM 5-34 Engineering Field Data
  4. FM 5-36 Route Reconnaissance and Classification
  5. FMFM 13 MAGTF Engineer Operations
  6. FMFM 4-4 Engineer Operations
  7. GTA 5-2-5 Engineer Reconnaissance
  8. JP 3-34 Engineer Doctrine for Joint Operations
  9. MCRP 3-17A Engineer Field Data
  10. MCRP 3-17B Engineer Forms and Reports
  11. MCWP 3-35.1 Cold Weather Operations
  12. MCWP 3-35.2 Mountain Operations
  13. MCWP 3-35.5 Jungle Operations
  14. MCWP 3-35.6 Desert Operations
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**3004. 6000-LEVEL TRAINING EVENTS**

**ENGR-MOBL-6701:** Create expeditionary roads and trails

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a mission, the commanders intent, a tactical situation, a map, task organization of engineer equipment and personnel, and references

**STANDARD:** To create/repair/maintain expeditionary roads and trails or MSR's/ASR's that meets or exceeds the traffic support requirements in accordance with the commanders' intent and the mobility plan.

**REFERENCES:**

1. FM 100-10 Combat Service Support
2. FM 3-07 Stability Operations and Support Operations
3. FM 5-100 Engineers in Combat Operations
4. FM 5-101 Mobility
5. FM 5-101-5-1 Operational Terrain and Symbols
6. FM 5-103 Survivability
7. FM 5-170 Engineer Reconnaissance
8. FM 5-250 Explosives and Demolitions
9. FM 5-335 Drainage
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 5-36 Route Reconnaissance and Classification
12. FM 5-412 Project Management
13. FM 5-434 Earthmoving Operations
14. FM 5-446 Military Non-Standard Fixed Bridges
15. FM 90-3 Desert Operations
16. FM 90-5 Jungle Operations
17. FMFM 4-4 Engineer Operations
18. FMFRP 12-51 Engineer Operations
19. GTA 5-2-5 Engineer Reconnaissance
20. GTA 5-7-13 Bridge Classification Booklet
21. GTA 5-7-6 Bridge Design Card
22. MCWP 4-11 Combat Service Support

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**ENGR-MOBL-6702:** Conduct breach lane improvement operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, an area where an obstacle breach was conducted, task organized personnel and equipment, and references.

**STANDARD:** To improve the lanes through a breach site to provide suitable LOC's/MSR's in accordance with the commanders' intent and concept of operations.

**REFERENCES:**

1. FM 100-10 Combat Service Support
  2. FM 5-100 Engineers in Combat Operations
  3. FM 5-101 Mobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 5-250 Explosives and Demolitions
  6. FM 5-34 Engineer Field Data - Field Expedient Charges
  7. FM 90-13-1 Combined Arms Breaching Operations
  8. FM 90-3 Desert Operations
  9. FM 90-5 Jungle Operations
  10. FMFM 13 MAGTF Engineer Operations
  11. FMFM 13-7 MAGTF Breaching Operations
  12. FMFM 4-4 Engineer Operations
  13. MCWP 4-11 Combat Service Support
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**ENGR-MOBL-6703:** Conduct gap crossing operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Gap crossing includes both wet and dry gaps. It includes both standard (IRB or MGB) and non-standard (wood, concrete, LOC, other) bridging.

**CONDITION:** Given a mission, commander's intent, a map, task organization of equipment and personnel, and the appropriate references.

**STANDARD:** To provide an avenue of approach, lane, or means across a gap that will meet or exceed military load classification required to support the concept of operations in accordance with the commander's intent.

**EVENT COMPONENTS:**

1. Plan bridging operations
2. Coordinate bridging operations
3. Prepare the bridge sites
4. Assemble the bridge
5. Conduct engineer reconnaissance
6. Disassemble the bridge

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-434 Earthmoving Operations
8. FM 5-446 Military Non-Standard Fixed Bridges
9. FM 90-13-1 Combined Arms Breaching Operations
10. FMFM 4-4 Engineer Operations
11. GTA 5-7-13 Bridge Classification Booklet
12. GTA 5-7-6 Bridge Design Card
13. MCRP 3-17A Engineer Field Data

14. MCRP 3-17B Engineer Forms and Reports
  15. MCWP 3-17 Engineer Operations
  16. MCWP 3-17.1 River-Crossing Operations
  17. MCWP 3-17.3 Breaching Operations
  18. MCWP 3-17.3 MAGTF Breaching Operations
  19. TM 5-5420-212-12 Medium Girder Bridge
  20. TM 5-5420-212-12-1 Link Reinforcement Set
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**ENGR-SURV-6704:** Conduct passive security

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Measures include but are not limited to; camouflage, dispersion, hardening installations, concealment, deception, reconstitution, redundancy, detection and warning systems, protective construction, use of natural cover, etc.

**CONDITION:** Given a mission, commander's intent, a map, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To conduct passive rear area or air defense security measures taken to minimize the effectiveness of hostile air/ground or missile threats against friendly forces or assets.

**REFERENCES:**

1. FM 20-3 Camouflage
2. FM 20-32 Mine/Countermining Operations
3. FM 21-75 Combat Skills of the Soldier
4. FM 3-06 Urban Operations
5. FM 3-07 Stability Operations and Support Operations
6. FM 5-100 Engineers in Combat Operations
7. FM 5-102 Countermobility
8. FM 5-103 Field Fortifications
9. FM 5-103 Survivability
10. FM 5-170 Engineer Reconnaissance
11. FM 5-250 Explosives and Demolitions
12. FM 5-34 Engineering Field Data
13. FM 5-36 Route Reconnaissance and Classification
14. FM 5-412 Project Management
15. FM 5-426 Carpentry
16. FM 5-434 Earthmoving Operations
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FMFM 13 MAGTF Engineer Operations
20. FMFM 4-4 Engineer Operations
21. FMFRP 12-51 Engineer Operations
22. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
23. JP 3-34 Engineer Doctrine for Joint Operations
24. MCWP 3-1 Ground Combat Operations
25. MCWP 3-17 Engineer Operations
26. MCWP 3-35.3 Military Operations on Urbanized Terrain



- 27. MCWP 3-35.5 Jungle Operations
  - 28. MCWP 3-35.6 Desert Operations
  - 29. MCWP 3-41.1 Rear Area Operations
  - 30. MCWP 4-11 Combat Service Support
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**ENGR-XENG-6705:** Conduct vertical construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct vertical construction is to build or provide improvements to existing structures or construction of base camps, command posts, and maintenance facilities for use by the MAGTF.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and appropriate references

**STANDARD:** To build/improve facilities to meet or exceed the requirements listed in the design specifications in accordance with the commanders' intent.

**EVENT COMPONENTS:**

- 1. Plan horizontal construction
- 2. Conduct engineer reconnaissance
- 3. Coordinate horizontal construction
- 4. Construct a hasty/deliberate road or trail
- 5. Conduct site preparation
- 6. Construct an expeditionary air field
- 7. Conduct dust abatement
- 8. Conduct beachhead improvement

**REFERENCES:**

- 1. FM 21-10 Field Hygiene and Sanitation
- 2. FM 21-75 Combat Skills of the Soldier
- 3. FM 3-06 Urban Operations
- 4. FM 3-07 Stability Operations and Support Operations
- 5. FM 3-34 471 Plumbing, Pipefitting, and Sewerage
- 6. FM 5-100 Engineers in Combat Operations
- 7. FM 5-103 Field Fortifications
- 8. FM 5-163 Sewerage
- 9. FM 5-250 Explosives and Demolitions
- 10. FM 5-335 Drainage
- 11. FM 5-34 Engineering Field Data
- 12. FM 5-412 Project Management
- 13. FM 5-426 Carpentry
- 14. FM 5-428 Concrete Masonry
- 15. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
- 16. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
- 17. FM 5-434 Earthmoving Operations
- 18. FM 5-446 Military Non-Standard Fixed Bridges

19. FM 5-553 General Drafting
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 4-4 Engineer Operations
22. FMFRP 12-51 Engineer Operations
23. GTA 5-7-13 Bridge Classification Booklet
24. GTA 5-7-6 Bridge Design Card
25. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
26. JP 3-34 Engineer Doctrine for Joint Operations
27. MCWP 3-17 Engineer Operations
28. MCWP 3-35.1 Cold Weather Operations
29. MCWP 3-35.2 Mountain Operations
30. MCWP 3-35.3 Military Operations on Urbanized Terrain
31. MCWP 3-35.5 Jungle Operations
32. MCWP 3-35.6 Desert Operations
33. MCWP 3-41.1 Rear Area Operations
34. MCWP 4-11 Combat Service Support
35. TM 5-232 Elements of Construction Surveying
36. TM 5-760 Interior Wiring

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**ENGR-XENG-6706:** Conduct demolition and obstacle removal

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** To conduct demolition and to provide for clearance of obstacles from an operational area for the construction of facilities in the support of the MAGTF.

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide clear area for the construction of facilities in accordance with the commander's intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 34-130 Intelligence Preparation of the Battlefield
5. FM 5-100 Engineers in Combat Operations
6. FM 5-101 Mobility
7. FM 5-101-5-1 Operational Terrain and Symbols
8. FM 5-170 Engineer Reconnaissance
9. FM 5-250 Explosives and Demolitions
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
12. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
13. FM 90-13-1 Combined Arms Breaching Operations

14. FM 90-3 Desert Operations
  15. FM 90-5 Jungle Operations
  16. JP 3-34 Engineer Doctrine for Joint Operations
  17. MCWP 3-35.2 Mountain Operations
  18. MCWP 3-35.3 Military Operations on Urbanized Terrain
  19. MCWP 3-35.5 Jungle Operations
  20. MCWP 3-35.6 Desert Operations
  21. MCWP 3-41.1 Rear Area Operations
- 

**ENGR-XENG-6707:** Conduct horizontal construction

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct horizontal construction is required to shape the terrain to meet the operational requirements of the MAGTF and includes MSR construction and/or maintenance; expeditionary airfields; site preparation for bed-down facilities; and ordnance storage facilities.

**CONDITION:** Given a mission, commander's intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and references

**STANDARD:** To construct the assigned project to meet or exceed the requirements listed in the design specifications and the commanders' intent.

**EVENT COMPONENTS:**

1. Plan horizontal construction
2. Conduct engineer reconnaissance
3. Coordinate horizontal construction
4. Construct a hasty/deliberate road or trail
5. Conduct site preparation
6. Construct an expeditionary air field
7. Conduct dust abatement
8. Conduct beachhead improvement

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-101-5-1 Operational Terrain and Symbols
4. FM 5-103 Survivability
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-335 Drainage
8. FM 5-34 Engineering Field Data
9. FM 5-36 Route Reconnaissance and Classification
10. FM 5-412 Project Management
11. FM 5-428 Concrete Masonry
12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design

14. FM 5-434 Earthmoving Operations
  15. FM 90-3 Desert Operations
  16. FM 90-5 Jungle Operations
  17. JP 3-34 Engineer Doctrine for Joint Operations
  18. MCWP 3-17 Engineer Operations
  19. MCWP 3-17.4 Engineer Reconnaissance
  20. MCWP 3-35.1 Cold Weather Operations
  21. MCWP 3-35.2 Mountain Operations
  22. MCWP 3-35.3 Military Operations on Urbanized Terrain
  23. MCWP 3-35.5 Jungle Operations
  24. MCWP 3-35.6 Desert Operations
  25. MCWP 3-41.1 Rear Area Operations
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**ENGR-XENG-6708:** Conduct general engineering operations

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct General Engineering Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required general engineering operations.

**CONDITION:** Given a mission, commanders intent, available resources, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms plan and security element.

**STANDARD:** To ensure general engineering support of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. FM 100-10 Combat Service Support
5. FM 100-23-1 Humanitarian Assistance Operations
6. FM 20-3 Camouflage
7. FM 20-31 Electric Power Generation in the Field
8. FM 21-10 Field Hygiene and Sanitation
9. FM 21-10-1 Unit Field Sanitation
10. FM 21-75 Combat Skills of the Soldier
11. FM 3-06 Urban Operations
12. FM 3-07 Stability Operations and Support Operations
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-100 Engineers in Combat Operations
15. FM 5-101-5-1 Operational Terrain and Symbols
16. FM 5-103 Field Fortifications
17. FM 5-103 Survivability
18. FM 5-163 Sewerage
19. FM 5-335 Drainage

20. FM 5-34 Engineering Field Data
21. FM 5-412 Project Management
22. FM 5-422 Engineer Prime Power Operations
23. FM 5-424 Theater of Operations Electrical Systems
24. FM 5-426 Carpentry
25. FM 5-428 Concrete Masonry
26. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
27. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
28. FM 5-434 Earthmoving Operations
29. FM 5-446 Military Non-Standard Fixed Bridges
30. FM 5-553 General Drafting
31. FM 90-3 Desert Operations
32. FM 90-5 Jungle Operations
33. FMFM 13 MAGTF Engineer Operations
34. FMFM 3-1 Command and Staff Action
35. FMFM 4-4 Engineer Operations
36. FMFRP 0-55 Desert Water Supply
37. FMFRP 12-51 Engineer Operations
38. GTA 5-7-13 Bridge Classification Booklet
39. GTA 5-7-6 Bridge Design Card
40. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
41. JP 3-34 Engineer Doctrine for Joint Operations
42. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
43. MCRP 3-17A Engineer Field Data
44. MCRP 3-17B Engineer Forms and Reports
45. MCRP 4-11.1D Field Hygiene and Sanitation
46. MCRP 4-11B Environmental Considerations in Military Operations
47. MCWP 3-1 Ground Combat Operations
48. MCWP 3-17 Engineer Operations
49. MCWP 3-35.1 Cold Weather Operations
50. MCWP 3-35.2 Mountain Operations
51. MCWP 3-35.3 Military Operations on Urbanized Terrain
52. MCWP 3-35.5 Jungle Operations
53. MCWP 3-35.6 Desert Operations
54. MCWP 3-41.1 Rear Area Operations
55. MCWP 3.21.1 Aviation Ground Support
56. MCWP 4-1 Logistics Operations
57. MCWP 4-11 Combat Service Support
58. MCWP 4-11.3 Transportation Operations
59. MCWP 4-11.4 Maintenance Operations
60. MCWP 4-11.6 Bulk Liquid Operations
61. MCWP 4-24 Commander's Guide to Maintenance
62. MCWP 4-25.5 Bulk Liquids Operations
63. MCWP 4-6 MAGTF Supply Operations
64. MCWP 5-1 Marine Corps Planning Process

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**FUEL-XENG-6709:** Coordinate Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Coordinate Bulk Petroleum Operations,

**CONDITION:** Given a mission order, the location of the operation, estimated fuel requirements, identified personnel, required equipment, and current references.

**STANDARD:** To provide sustained operations to meet mission requirements.

**EVENT COMPONENTS:**

1. Supervise Fuel Systems Communications Plan
2. Prepare Fuel Distribution Plan
3. Conduct Petroleum Laboratory Quality Surveillance and Control Program

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-68 Aircraft Refueling
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**FUEL-XENG-6710:** Receive Petroleum Product

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Receive Petroleum Product.

**CONDITION:** Given the required bulk petroleum equipment, trained personnel, and references.

**STANDARD:** To provide fuel support to using units.

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**FUEL-XENG-6711:** Provide Tactical Bulk Petroleum Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Provide Tactical Bulk Fuel Storage.

**CONDITION:** Given an operations order and estimated fuel requirements.

**STANDARD:** To provided fuel support to using units to meet mission requirements.

**EVENT COMPONENTS:**

1. Provide Fuel Consumption Estimates to Higher Headquarters
2. Collate Fuel Requirements
3. Prepare Preliminary Environmental Assessments
4. Analyze Bulk Fuel Factors Affecting Operations and Exercise

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  3. MCO 3500.27B Operational Risk Management
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**FUEL-XENG-6712:** Conduct Tactical Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct Bulk Petroleum Operations.

**CONDITION:** Given a mission order, location of operation, estimated fuel requirements, required personnel and equipment, a communications plan, necessary support equipment, and current references.

**STANDARD:** To provide uninterrupted fuel support per mission requirements.

**EVENT COMPONENTS:**

1. Develop Bulk Fuel Site Rear Area Security Plan
2. Manage Procedures Required to Change Product Types
3. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-68 Aircraft Refueling
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-6713:** Establish a Petroleum Dispensing Point

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Establish a Petroleum Dispensing Point.

**CONDITION:** Provided a tactical fuel system, operations order, required personnel, and references.

**STANDARD:** To ensure using units receive the necessary fuel for the mission.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11 Combat Service Support
  3. MCWP 4-25.5 Bulk Liquids Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**UTIL-XENG-6714:** Provide Tactical Water/Hygiene Services

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a operational order,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 49 CFR 172.704(a)(3) Hazardous Material Regulations
3. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
4. EM 0077 Water Purification, Supply, and Related Equipment.
5. EM 0086 Generator Sets and Power Units (CD-ROM)
6. EM 0127 Laundry, Bath, and Hygiene Equipment
7. FM 10-52 Water Supply in Theaters of Operation
8. FM 10-52-1 Water Supply Point Equipment and Operations
9. FM 100-14 Risk Management
10. FM 20-3 Camouflage
11. FM 21-10 Field Hygiene and Sanitation
12. FM 21-10-1 Unit Field Sanitation
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-163 Sewerage
15. FM 5-335 Drainage
16. FMFM 4-4 Engineer Operations
17. FMFRP 0-55 Desert Water Supply
18. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
19. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
20. MCO 3500.27B Operational Risk Management
21. MCO 4610.35 USMC Equipment Characteristics File
22. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
23. MCO 5100.29 Marine Corps Safety Program
24. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
25. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
26. MCO P5090.2A Environmental Compliance and Protection Manual
27. MCRP 3-02G First Aid
28. MCWP 4-11.6 Bulk Liquid Operations
29. NAVMED P-5010 Navy Sanitation
30. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
31. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
32. SL-3 86702D w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
33. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )



34. SL-3 8D486B Pump Assembly 350 GPM
  35. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
  36. SL-3-09467A Pump Assembly, Centrifugal
  37. SL-4-08922C Pump Unit 125 GPM
  38. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  39. TC 11-6 Grounding Techniques
  40. TM 01034D-12/P1 3000 Gallon Tank
  41. TM 01034D/1 Tank, Fabric, Self Supporting
  42. TM 01243E-14/1 Laundry Facility, Bare Base
  43. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  44. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  45. TM 08936A-13&P Forward Area Water Point Supply System
  46. TM 08936A-13&P Forward Area Water Point Supply System
  47. TM 08990A-15&P/1 Sixcon Water Tank Module
  48. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
  49. TM 09777A-14/1 Water Purification Systems
  50. TM 10-4320-226-14 350 GPM Pump
  51. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
  52. TM 10-4320-343-14 350 GPM Pump
  53. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
  54. TM 10006A-14/P1 Shower Facility, Bare Base
  55. TM 10596A-13&P Marine Corps Hose Reel System
  56. TM 10802A-14/1 Tactical Water Purification System
  57. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  58. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  59. TM 5-4320-303-10 600 GPM Pump
  60. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  61. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
  62. TM 9406-15 Grounding Procedures
  63. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM
  64. UM-PLMS Publications Library Management System
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**ENGR-DEMO-6801:** Direct demolition operations

**SUPPORTED MET(S):** 2, 3, 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Demolitions operations is defined as the application of demolitions in the execution of mobility, counter mobility, survivability and expeditionary operations.

**CONDITION:** Given a plan and available resources

**STANDARD:** To execute mobility, counter mobility, survivability and expeditionary operations.

**EVENT COMPONENTS:**

1. Supervise the execution of the order.
2. Execute mobility demolition operations
3. Execute countermobility demolition operations
4. Execute survivability demolition operations

5. Execute expeditionary engineering demolition operations

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
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**ENGR-DEMO-6802:** Plan demolition operations

**SUPPORTED MET(S):** 2, 3, 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Demolitions operations is defined as the application of demolitions in the execution of mobility, counter mobility, survivability and expeditionary operations.

**CONDITION:** Given the commander's intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms and demolitions recon report

**STANDARD:** In order to effect the execution of mobility, counter mobility, survivability and expeditionary operations.

**EVENT COMPONENTS:**

1. Identify all available resources
2. Develop engineer estimate of supportability.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
- 

**ENGR-DEMO-6803:** Coordinate demolition operations

**SUPPORTED MET(S):** 2, 3, 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Demolitions operations is defined as the application of demolitions in the execution of mobility, counter mobility, survivability and expeditionary operations.

**CONDITION:** Given a plan and available resources

**STANDARD:** In order to synchronize the execution of mobility, counter mobility, survivability and expeditionary operations.

**EVENT COMPONENTS:**

1. Identify all organic and non-organic engineer assets available
2. Coordinate demolitions requirements organic and non-organic
3. Prioritize demolition missions

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
- 

**ENGR-MOBL-6804:** Conduct area clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide a secure environment for operations in accordance with the commanders intent and mobility plan.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 3-06 Urban Operations
  3. FM 3-07 Stability Operations and Support Operations
  4. FM 34-130 Intelligence Preparation of the Battlefield
  5. FM 5-100 Engineers in Combat Operations
  6. FM 5-101 Mobility
  7. FM 5-101-5-1 Operational Terrain and Symbols
  8. FM 5-170 Engineer Reconnaissance
  9. FM 5-250 Explosives and Demolitions
  10. FM 5-34 Engineer Field Data - Field Expedient Charges
  11. FM 90-13-1 Combined Arms Breaching Operations
  12. FM 90-3 Desert Operations
  13. FM 90-5 Jungle Operations
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**ENGR-MOBL-6805:** Conduct obstacle breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, designated area, tasked organized personnel and equipment, and references.

**STANDARD:** To insure the proper reduction of enemy obstacles to support the commander's intent and concept of operations.

**EVENT COMPONENTS:**

1. Conduct assault breaching operations
2. Conduct expedient gap crossing operations
3. Conduct route sweep operations
4. Conduct urban breaching
5. Conduct engineer reconnaissance
6. Conduct instride breaching operations

7. Conduct covert breaching operations
8. Plan breaching operations
9. Conduct deliberate breaching operations
10. Coordinate breaching operations

**REFERENCES :**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 90-13-1 Combined Arms Breaching Operations
9. FMFM 13 MAGTF Engineer Operations
10. FMFM 13-7 MAGTF Breaching Operations
11. FMFM 4-4 Engineer Operations
12. MCRP 3-17A Engineer Field Data
13. MCRP 3-17B Engineer Forms and Reports
14. MCWP 3-17 Engineer Operations
15. MCWP 3-17.1 River-Crossing Operations
16. MCWP 3-17.3 Breaching Operations
17. MCWP 3-17.3 MAGTF Breaching Operations

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**ENGR-MOBL-6806:** Conduct route clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, a designated route with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure friendly force mobility on the cleared route [friendly forces are not fixed, turned, blocked, nor disrupted] in accordance with the commanders intent, while the route remains in friendly forces control.

**REFERENCES :**

1. FM 5-101 Mobility
  2. FM 5-170 Engineer Reconnaissance
  3. FM 5-250 Explosives and Demolitions
  4. FM 5-34 Engineer Field Data - Field Expedient Charges
  5. FM 5-36 Route Reconnaissance and Classification
  6. FM 90-13-1 Combined Arms Breaching Operations
  7. FM 90-3 Desert Operations
  8. FM 90-5 Jungle Operations
  9. GTA 5-2-5 Engineer Reconnaissance
  10. GTA 5-7-13 Bridge Classification Booklet
  11. MCRP 3-17A Engineer Field Data
  12. MCRP 3-17B Engineer Forms and Reports
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**ENGR-CMOB-6807:** Conduct countermobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Conduct countermobility planning.
2. Integrate countermobility plan with the concept of operations.
3. Participate in supported unit planning.
4. Complete the engineering portions of the orders
5. Identify what organic and non-organic units are completing each task
6. Develop engineer estimate of supportability.
7. Issue warning orders to subordinate units

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 90-1 Countermobility
  7. FM 90-7 Combined Arms Obstacle Integration
  8. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  9. JP 3-34 Engineer Doctrine for Joint Operations
  10. MCRP 3-17B Engineer Forms and Reports
- 

**ENGR-CMOB-6901:** Create obstacles and barriers

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 2 months

**DESCRIPTION:** Obstacles and barriers can be explosive or non-explosive in nature

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms, an equipment density list and available personnel

**STANDARD:** To create obstacles/ barriers to turn, block, fix, or disrupt the enemy that supports commander's intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 3-06 Urban Operations
  3. FM 5-100 Engineers in Combat Operations
  4. FM 5-102 Countermobility
  5. FM 5-170 Engineer Reconnaissance
  6. FM 5-250 Explosives and Demolitions
  7. FM 5-34 Engineer Field Data - Field Expedient Charges
  8. FM 5-36 Route Reconnaissance and Classification
  9. FM 90-1 Countermobility
  10. FM 90-3 Desert Operations
  11. FM 90-5 Jungle Operations
  12. FM 90-7 Combined Arms Obstacle Integration
  13. FMFM 13 MAGTF Engineer Operations
  14. FMFM 13 MAGTF Engineer Operations
  15. FMFM 4-4 Engineer Operations
  16. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  17. JP 3-34 Engineer Doctrine for Joint Operations
  18. MCRP 3-17A Engineer Field Data
  19. MCWP 3-17 Engineer Operations
  20. TM 11275-15/3C Characteristics of Engineering Equipment
  21. UNIT SOP Unit's Standing Operating Procedures
  22. Appropriate Technical Manuals
- 

**ENGR-MOBL-6902:** Conduct construction on tactical landing zones

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Scope of work can include but is not limited to construction, repair, maintenance of expeditionary airfields, existing airfields, and landing zones to accommodate fixed and rotary wing aircraft. This includes all classifications of Forward Operating Bases (main air base, air facility, air site, air point).

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications and appropriate references

**STANDARD:** To create/repair/maintain TLZ's that meets or exceeds the landing zone requirements listed in the design specifications

**EVENT COMPONENTS:**

1. Plan construction of tactical landing zones
2. Coordinate construction of tactical landing zones
3. Conduct obstruction removal
4. Conduct engineer reconnaissance

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions

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5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  8. FMFM 13 MAGTF Engineer Operations
  9. FMFM 4-4 Engineer Operations
  10. MCRP 3-17A Engineer Field Data
  11. MCRP 3-17B Engineer Forms and Reports
  12. MCWP 3-17 Engineer Operations
  13. MCWP 3.21.1 Aviation Ground Support
  14. Appropriate Technical Manuals
- 

**ENGR-RECN-6903:** Conduct route reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Confirm historical line-of-communications data through on-site reconnaissance to determine critical routes and roads, key terrain impacting on planned/contingency operations. Route reconnaissance includes bridge, roads, fords, ferries, tunnels, airfields, and other transportation related features.

**CONDITION:** Given a mission, commanders' intent, a map, task organization of personnel and equipment, route/road to reconnoiter and references

**STANDARD:** To conduct a reconnaissance of the specified route/road and gather all relevant engineer data and produce an engineer estimate (or designated products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
  2. FM 5-101 Mobility
  3. FM 5-102 Countermobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. GTA 5-2-5 Engineer Reconnaissance
  8. GTA 5-7-13 Bridge Classification Booklet
  9. JP 3-34 Engineer Doctrine for Joint Operations
  10. MCRP 3-17A Engineer Field Data
  11. MCRP 3-17B Engineer Forms and Reports
  12. MCWP 3-17 Engineer Operations
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**ENGR-REC-6904:** Conduct area reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct reconnaissance in a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area, such as a town, ridgeline, woods, or other feature critical to operations( i.e. a bridge or installation).

**CONDITION:** Given a mission, commander's intent, task organization of personnel and equipment, an area, and references.

**STANDARD:** To conduct an area reconnaissance of the specified area/feature and gather all relevant engineer data and produce an engineer estimate (or designated products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
13. MCWP 3-17 Engineer Operations
14. MCWP 3-17.4 Engineer Reconnaissance

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**ENGR-REC-6905:** Conduct zone reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, and enemy forces within a zone defined by boundaries. A zone reconnaissance normally is assigned when the enemy situation is vague or when information concerning cross-country trafficability is desired.

**CONDITION:** Given a mission, commander's intent, map, designated zone, task organization of personnel and equipment, and references.



**STANDARD:** To conduct a reconnaissance of the specified zone and gather all relevant engineer data and produce an engineer estimate (or designated products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
13. MCWP 3-17 Engineer Operations
14. MCWP 3-17.4 Engineer Reconnaissance
15. MCWP 3-35.5 Jungle Operations
16. MCWP 3-35.6 Desert Operations

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**ENGR-SURV-6906:** Conduct base defense

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Includes but is not limited to; mutually supporting bunkers, fighting positions, non-explosive and explosive obstacles, vehicle defilades, ECP/VCP's, berms/barriers, HN support, communications, warning systems, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, force protection plan, task organization of personnel and equipment, and references.

**STANDARD:** To employ positions, obstacles, barriers, and procedures that mitigate the risk of injury to friendly forces from enemy actions in accordance with the commanders intent and concept of operations.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 5-103 Survivability
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-SURV-6907:** Construct survivability positions

**SUPPORTED MET(S):** 3, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Positions may include but are not limited to; bunkers, vehicle defilades, ECP/VCP's, berms/barriers, hardening of existing structures, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, and survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To build survivability positions that meets or exceeds the mission requirements and supports the concept of operations in accordance with the commanders' intent.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 5-100 Engineers in Combat Operations
5. FM 5-102 Countermobility
6. FM 5-103 Survivability
7. FM 5-170 Engineer Reconnaissance
8. FM 5-250 Explosives and Demolitions
9. FM 5-34 Engineering Field Data
10. FM 5-426 Carpentry
11. FM 90-3 Desert Operations
12. FM 90-5 Jungle Operations
13. FMFM 13 MAGTF Engineer Operations
14. FMFRP 12-51 Engineer Operations
15. JP 3-34 Engineer Doctrine for Joint Operations
16. MCRP 3-17A Engineer Field Data
17. MCWP 3-17 Engineer Operations
18. MCWP 3-41.1 Rear Area Operations
19. MCWP 4-11 Combat Service Support

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-REC-6908:** Coordinate engineer forces in support of reconnaissance operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given commanders intent, operations order, and available resources

**STANDARD:** To task engineer forces to conduct/support engineer reconnaissance missions in accordance with the commanders' intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-170 Engineer Reconnaissance
  3. FM 5-34 Engineering Field Data
  4. FM 5-36 Route Reconnaissance and Classification
  5. FMFM 13 MAGTF Engineer Operations
  6. FMFM 4-4 Engineer Operations
  7. GTA 5-2-5 Engineer Reconnaissance
  8. JP 3-34 Engineer Doctrine for Joint Operations
  9. MCRP 3-17A Engineer Field Data
  10. MCRP 3-17B Engineer Forms and Reports
  11. MCWP 3-35.1 Cold Weather Operations
  12. MCWP 3-35.2 Mountain Operations
  13. MCWP 3-35.5 Jungle Operations
  14. MCWP 3-35.6 Desert Operations
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**ENGR-MOBL-6909:** Conduct mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes rules of engagement and supporting arms from the high water mark inland

**STANDARD:** To achieve force projection and conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Maintain organic reserve forces.
2. Issue the order.
3. Orchestrate the execution of mobility operations.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment
22. TM 9-1300-214 Military Explosives
23. UNIT SOP Unit's Standing Operating Procedures

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**ENGR-SURV-6910:** Conduct survivability operations

**SUPPORTED MET(S):** 3, 4

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct Survivability Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required survivability operation.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To ensure survivability of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. FM 5-103 Field Fortifications
  4. FM 5-103 Survivability
  5. FM 5-170 Engineer Reconnaissance
  6. FM 5-250 Explosives and Demolitions
  7. FM 5-335 Drainage
  8. FM 5-34 Engineer Field Data - Field Expedient Charges
  9. FM 5-412 Project Management
  10. FM 5-426 Carpentry
  11. FM 5-428 Concrete Masonry
  12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  14. FM 5-434 Earthmoving Operations
  15. FM 5-446 Military Non-Standard Fixed Bridges
  16. FM 5-553 General Drafting
  17. FM 90-3 Desert Operations
  18. FM 90-5 Jungle Operations
  19. FM 90-7 Combined Arms Obstacle Integration
  20. FMFM 13 MAGTF Engineer Operations
  21. FMFM 3-1 Command and Staff Action
  22. FMFM 4-4 Engineer Operations
  23. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  24. JP 3-34 Engineer Doctrine for Joint Operations
  25. MCRP 3-17A Engineer Field Data
  26. MCRP 3-17B Engineer Forms and Reports
  27. MCWP 4-11 Combat Service Support
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**UTIL-XENG-6911:** Provide Tactical Electrical Supply

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a operation order,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
4. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
5. EM 0086 Generator Sets and Power Units (CD-ROM)
6. EM 0158 Power Supplies, Light Sets, and Battery Chargers

7. EM 0180 Warranties
  8. EMC Electric Motor Controls by American Technical Publishers, Inc.
  9. EMR Electric Motor Repair, Third Addition
  10. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  11. FM 100-10 Combat Service Support
  12. FM 100-14 Risk Management
  13. FM 100-23-1 Humanitarian Assistance Operations
  14. FM 20-3 Camouflage
  15. FM 20-31 Electric Power Generation in the Field
  16. FMFM 13 MAGTF Engineer Operations
  17. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
  18. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
  19. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  20. MCO 3500.27B Operational Risk Management
  21. MCO 5100.29 Marine Corps Safety Program
  22. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
  23. SL-3-01204A Components List for Tool Kit, Lineman (Mar 98), w/Ch 1 (Apr99)
  24. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  25. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  26. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  27. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
  28. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
  29. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  30. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
  31. TM 06858B/06859D-12 MEP-5 Generator Set
  32. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
  33. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
  34. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  35. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  36. National Electrical Code
  37. Wiring Diagrams
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**3005. 5000-LEVEL TRAINING EVENTS**

**ENGR-MOBL-5701:** Install a Medium Girder Bridge

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, commanders intent, a bridge construction site, medium girder bridge components, tools, launch vehicle, task organized personnel, and references.

**STANDARD:** To meet design specifications and intended bridge classification per the mission, while observing safety precautions during erection and launch per the references

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. TM 08676A-10/1-1 Operators Manual Medium Girder Bridge
3. TM 5-5420-212-12 Medium Girder Bridge
4. TM 5-5420-212-12-1 Link Reinforcement Set

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17920 Panel Bridge Area

**EQUIPMENT:** MTRV 7/Ton Truck

**UNITS/PERSONNEL:** Range safety officer, corpsman, MTRV 7ton truck operator

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**FUEL-XENG-5702:** Coordinate Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Coordinate Bulk Petroleum Operations,

**CONDITION:** Given a mission order, location of the operation, estimated fuel requirements, personnel, and required equipment.

**STANDARD:** to support mission requirements.

**EVENT COMPONENTS:**

1. Supervise Fuel Systems Communications Plan
2. Prepare Fuel Distribution Plan
3. Conduct Petroleum Laboratory Quality Surveillance and Control Program

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-68 Aircraft Refueling

3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**ENGR-MOBL-5703:** Assemble a ribbon raft

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a mission, commanders intent, a map, task organization of equipment and personnel, a wet gap, and references

**STANDARD:** To meet the mission requirements in accordance with the mission and commanders intent

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. MCRP 3-17A Engineer Field Data
  3. MCWP 3-17.1 River-Crossing Operations
  4. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
  5. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)
- 

**UTIL-XENG-5704:** Provide Potable Water

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a Utilities plan, required Hygiene equipment and personnel,

**STANDARD:** In accordance with the operational order.

**EVENT COMPONENTS:**

1. Conduct bulk water operations

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 100-10 Combat Service Support
4. FM 100-23-1 Humanitarian Assistance Operations
5. FM 101-10-1 Organizational, Technical and Logistical Data
6. FM 20-3 Camouflage
7. FM 21-10 Field Hygiene and Sanitation
8. FM 5-163 Sewerage
9. FMFM 4-4 Engineer Operations
10. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)



11. MCWP 4-11.6 Bulk Liquid Operations
  12. TM 01034D-12/P1 3000 Gallon Tank
  13. TM 01034D/1 Tank, Fabric, Self Supporting
  14. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  15. TM 08936A-13&P Forward Area Water Point Supply System
  16. TM 08990A-15&P/1 Sixcon Water Tank Module
  17. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
  18. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  19. TM 09777A-14/1 Water Purification Systems
  20. TM 5-4320-266-14 350 GPM Pump
  21. TM 5-4320-303-10 600 GPM Pump
  22. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  23. TM 5-4320-309-14 125 GPM Pump
  24. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
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**FUEL-XENG-5705:** Identify Fuel Testing Requirements

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Identify Fuel Testing Requirements.

**CONDITION:** Provided a mission order, required testing equipment, and current references.

**STANDARD:** To meet established specifications tested by American Society for Testing Materials (ASTM) methods.

**REFERENCES:**

1. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  2. FM 10-67-2 Petroleum Laboratory Testing and Operations
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  5. ULSS-00 3089-15 TPLM
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**ENGR-MOBL-5706:** Create expeditionary roads and trails

**SUPPORTED MET(S):** 2, 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a mission, the commanders intent, a tactical situation, a map, task organization of engineer equipment and personnel, and references

**STANDARD:** To create/repair/maintain expeditionary roads and trails or designated MSR's/ASR's that meets or exceeds the traffic support requirements in accordance with the commanders' intent and the mobility plan.

**REFERENCES:**

1. FM 100-10 Combat Service Support
  2. FM 3-07 Stability Operations and Support Operations
  3. FM 5-100 Engineers in Combat Operations
  4. FM 5-101 Mobility
  5. FM 5-101-5-1 Operational Terrain and Symbols
  6. FM 5-103 Survivability
  7. FM 5-170 Engineer Reconnaissance
  8. FM 5-250 Explosives and Demolitions
  9. FM 5-335 Drainage
  10. FM 5-34 Engineer Field Data - Field Expedient Charges
  11. FM 5-36 Route Reconnaissance and Classification
  12. FM 5-412 Project Management
  13. FM 5-434 Earthmoving Operations
  14. FM 5-446 Military Non-Standard Fixed Bridges
  15. FM 90-3 Desert Operations
  16. FM 90-5 Jungle Operations
  17. FMFM 4-4 Engineer Operations
  18. FMFRP 12-51 Engineer Operations
  19. GTA 5-2-5 Engineer Reconnaissance
  20. GTA 5-7-13 Bridge Classification Booklet
  21. GTA 5-7-6 Bridge Design Card
  22. MCWP 4-11 Combat Service Support
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**UTIL-XENG-5707:** Provide Hygiene Support

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a Utilities plan, required Hygiene equipment personnel and the references

**STANDARD:** In accordance with the operational order.

**EVENT COMPONENTS:**

1. Provide laundry support
2. Provide shower facilities
3. Provide wash down capability

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 5-163 Sewerage
5. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
6. MCO 3500.27B Operational Risk Management
7. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
8. MCRP 3-02G First Aid
9. MCRP 4-11.1D Field Hygiene and Sanitation
10. MCWP 4-11.1 Health Service Support Operations
11. NAVMED P-5010 Navy Sanitation

12. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  13. TM 01034D-12/P1 3000 Gallon Tank
  14. TM 08936A-13&P Forward Area Water Point Supply System
  15. TM 10006A-14/P1 Shower Facility, Bare Base
  16. Federal, State, and Local Environmental Regulations
- 

**FUEL-XENG-5708:** Direct Bulk Petroleum Site Construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Direct Bulk Petroleum Site Construction.

**CONDITION:** Provided a fuel distribution plan with a system layout, necessary equipment, engineer equipment operators, and references.

**STANDARD:** To ensure proper set-up for bulk petroleum operations.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**ENGR-MOBL-5709:** Conduct breach lane improvement operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, an area where an obstacle breach was conducted, task organized personnel and equipment, and references

**STANDARD:** To improve the lanes through a breach site to provide suitable LOC's/MSR's in accordance with the commander's intent and the concept of operations.

**REFERENCES:**

1. FM 100-10 Combat Service Support
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-34 Engineer Field Data - Field Expedient Charges
7. FM 90-13-1 Combined Arms Breaching Operations
8. FM 90-3 Desert Operations
9. FM 90-5 Jungle Operations
10. FMFM 13 MAGTF Engineer Operations
11. FMFM 13-7 MAGTF Breaching Operations

12. FMFM 4-4 Engineer Operations
13. MCWP 4-11 Combat Service Support

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**UTIL-XENG-5710:** Provide Environmental Control Unit (ECU) Support

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a Utilities plan, required ECU equipment, and personnel.

**STANDARD:** In accordance with the operational order.

**EVENT COMPONENTS:**

1. Establish and operate collection operations facilities
2. Coordinate HVAC services to supported units equipment

**REFERENCES:**

1. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
2. CFR 82 EPA Section 608
3. CFR 82 EPA Section 609
4. TM 9-4110-256-14 Refrigeration Unit, Mechanical 10K BTU, Electrical text book
5. TM 9-4120-371-14 18,000 BTU Air Conditioner
6. TM 9-4120-389-14 36,000 BTU Air Conditioner
7. TM 9-4120-393-14 60,000 BTU Air Conditioner

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**FUEL-XENG-5711:** Employ Bulk Petroleum Distribution Systems

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Employ bulk petroleum distribution systems,

**CONDITION:** Provided a mission order, a fuel distribution system plan, equipment, materials, proper personnel, and current references.

**STANDARD:** To support the fuel requirements specified in the order.

**EVENT COMPONENTS:**

1. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
-

**ENGR-MOBL-5712:** Install ribbon bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Platoon Commander, Platoon Guide, Platoon Sergeant, Squad Leader

**GRADES:** SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, commanders intent, wet gap crossing site, bridge components, bridge erection equipment, tools, bridge erection boats, fuel, task organized personnel, and references.

**STANDARD:** To meet design specifications while observing safety precautions during erection and launch per the references.

**PERFORMANCE STEPS:**

1. Review references/directives/specifications
2. Brief/instruct the crew on the mission/assignment
3. Off load bridge bays
4. Connect bays
5. Enforce safety precautions
6. Position bridge
7. Debrief the crew
8. Inform the engineer officer of project status
9. Submit required reports

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. MCRP 3-17B Engineer Forms and Reports
3. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
4. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17922 Floating Bridge Site

**EQUIPMENT:** MK 48/18, IRB Interior Bay, IRB Ramp Bay, MK II BEB

**UNITS/PERSONNEL:** RANGE SAFETY OFFICER, CORPSMAN, MK 48/18, OPERATOR, MK II BEB OPERATOR

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**UTIL-XENG-5713:** Provide Refrigeration Support

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a Utilities plan, required refrigeration equipment, personnel, and references.

**STANDARD:** In accordance with the operational order.

**EVENT COMPONENTS:**

1. Provide refrigerated storage.
2. Coordinate support to Health Services.

**REFERENCES:**

1. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
  2. CFR 82 EPA Section 608
  3. CFR 82 EPA Section 609
  4. TM 10673A-10/1 Enhanced Refrigeration Unit
  5. TM 10673A-12-2 ERU TM Manual
  6. TM 10673A-30P-3 ERU Parts Book
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**FUEL-XENG-5714:** Receive Petroleum Product

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Receive Petroleum Product.

**CONDITION:** Provided the required operations order, bulk petroleum equipment, trained personnel, and references.

**STANDARD:** To support mission requirements.

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**ENGR-MOBL-5715:** Conduct gap crossing operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Gap crossing includes both wet and dry gaps. It includes both standard (IRB or MGB) and non-standard (wood, concrete, LOC, other) bridging.

**CONDITION:** Given a mission, commander's intent, a map, task organization of equipment and personnel, and the appropriate references.

**STANDARD:** To provide an avenue of approach, lane, or means across a gap that will meet or exceed military load classification required to support the concept of operations in accordance with the commander's intent.

**EVENT COMPONENTS:**

1. Plan bridging operations
2. Coordinate bridging operations
3. Prepare the bridge sites

29 May 07

4. Assemble the bridge
5. Conduct engineer reconnaissance
6. Disassemble the bridge

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 5-434 Earthmoving Operations
9. FM 5-446 Military Non-Standard Fixed Bridges
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. GTA 5-7-13 Bridge Classification Booklet
15. GTA 5-7-6 Bridge Design Card
16. MCRP 3-17A Engineer Field Data
17. MCRP 3-17B Engineer Forms and Reports
18. MCWP 3-17 Engineer Operations
19. MCWP 3-17.1 River-Crossing Operations
20. MCWP 3-17.3 Breaching Operations
21. MCWP 3-17.3 MAGTF Breaching Operations
22. TM 5-5420-212-12 Medium Girder Bridge
23. TM 5-5420-212-12-1 Link Reinforcement Set

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**FUEL-XENG-5716:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage.

**CONDITION:** Provided containers of POL, storage area for POL, usage records, and references.

**STANDARD:** To ensure correct and efficient consumption, and safe storage of POL until the required amounts are on hand to support the mission per the current references.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**ENGR-SURV-5717:** Conduct passive security

**SUPPORTED MET(S):** 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Measures include but are not limited to; camouflage, dispersion, hardening installations, concealment, deception, reconstitution, redundancy, detection and warning systems, protective construction, use of natural cover, etc.

**CONDITION:** Given a mission, commander's intent, a map, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To conduct passive rear area or air defense security measures taken to minimize the effectiveness of hostile air/ground or missile threats against friendly forces or assets.

**REFERENCES:**

1. FM 20-3 Camouflage
2. FM 20-32 Mine/Countermining Operations
3. FM 21-75 Combat Skills of the Soldier
4. FM 3-06 Urban Operations
5. FM 3-07 Stability Operations and Support Operations
6. FM 5-100 Engineers in Combat Operations
7. FM 5-102 Countermobility
8. FM 5-103 Field Fortifications
9. FM 5-103 Survivability
10. FM 5-170 Engineer Reconnaissance
11. FM 5-250 Explosives and Demolitions
12. FM 5-34 Engineering Field Data
13. FM 5-36 Route Reconnaissance and Classification
14. FM 5-412 Project Management
15. FM 5-426 Carpentry
16. FM 5-434 Earthmoving Operations
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FMFM 13 MAGTF Engineer Operations
20. FMFM 4-4 Engineer Operations
21. FMFRP 12-51 Engineer Operations
22. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
23. JP 3-34 Engineer Doctrine for Joint Operations
24. MCWP 3-1 Ground Combat Operations
25. MCWP 3-17 Engineer Operations
26. MCWP 3-35.3 Military Operations on Urbanized Terrain
27. MCWP 3-35.5 Jungle Operations
28. MCWP 3-35.6 Desert Operations
29. MCWP 3-41.1 Rear Area Operations
30. MCWP 4-11 Combat Service Support

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**FUEL-XENG-5718:** Provide Tactical Bulk Petroleum Storage

**SUPPORTED MET(S):** 4



**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Provide Tactical Bulk Fuel Storage.

**CONDITION:** Given an operations order and estimated fuel requirements.

**STANDARD:** To sustain bulk petroleum operations.

**EVENT COMPONENTS:**

1. Provide Fuel Consumption Estimates to Higher Headquarters
2. Collate Fuel Requirements
3. Prepare Preliminary Environmental Assessments
4. Analyze Bulk Fuel Factors Affecting Operations and Exercise

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**ENGR-XENG-5719:** Conduct demolition and obstacle removal

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** To conduct demolition and to provide for clearance of obstacles from an operational area for the construction of facilities in the support of the MAGTF.

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide clear area for the construction of facilities in accordance with the commander's intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 34-130 Intelligence Preparation of the Battlefield
5. FM 5-100 Engineers in Combat Operations
6. FM 5-101 Mobility
7. FM 5-101-5-1 Operational Terrain and Symbols
8. FM 5-170 Engineer Reconnaissance
9. FM 5-250 Explosives and Demolitions
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
12. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design

13. FM 90-13-1 Combined Arms Breaching Operations
14. FM 90-3 Desert Operations
15. FM 90-5 Jungle Operations
16. JP 3-34 Engineer Doctrine for Joint Operations
17. MCWP 3-35.2 Mountain Operations
18. MCWP 3-35.3 Military Operations on Urbanized Terrain
19. MCWP 3-35.5 Jungle Operations
20. MCWP 3-35.6 Desert Operations
21. MCWP 3-41.1 Rear Area Operations

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**FUEL-XENG-5720:** Conduct Tactical Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct Tactical Bulk Petroleum Operations.

**CONDITION:** Given a mission order, location of operation, estimated fuel requirements, required personnel and equipment, a communications plan, necessary support equipment, and current references.

**STANDARD:** To provide uninterrupted fuel support per mission requirements.

**EVENT COMPONENTS:**

1. Develop Bulk Fuel Site Rear Area Security Plan
2. Manage Procedures Required to Change Product Types
3. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-68 Aircraft Refueling
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. MCWP 4-25.5 Bulk Liquids Operations
5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**ENGR-XENG-5721:** Conduct horizontal construction

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct horizontal construction is required to shape the terrain to meet the operational requirements of the MAGTF and includes MSR construction and/or maintenance; expeditionary airfields; site preparation for bed down facilities; and ordnance storage facilities.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and references

**STANDARD:** To construct the assigned project to meet or exceed the requirements listed in the design specifications and the commanders' intent.

**EVENT COMPONENTS:**

1. Plan horizontal construction
2. Conduct engineer reconnaissance
3. Coordinate horizontal construction
4. Construct a hasty/deliberate road or trail
5. Conduct site preparation
6. Construct an expeditionary air field
7. Conduct dust abatement
8. Conduct beachhead improvement

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-101-5-1 Operational Terrain and Symbols
4. FM 5-103 Survivability
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-335 Drainage
8. FM 5-34 Engineering Field Data
9. FM 5-36 Route Reconnaissance and Classification
10. FM 5-412 Project Management
11. FM 5-428 Concrete Masonry
12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
14. FM 5-434 Earthmoving Operations
15. FM 90-3 Desert Operations
16. FM 90-5 Jungle Operations
17. JP 3-34 Engineer Doctrine for Joint Operations
18. MCWP 3-17 Engineer Operations
19. MCWP 3-17.4 Engineer Reconnaissance
20. MCWP 3-35.1 Cold Weather Operations
21. MCWP 3-35.2 Mountain Operations
22. MCWP 3-35.3 Military Operations on Urbanized Terrain
23. MCWP 3-35.5 Jungle Operations
24. MCWP 3-35.6 Desert Operations
25. MCWP 3-41.1 Rear Area Operations

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**ENGR-XENG-5722:** Conduct vertical construction

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct vertical construction is to build or provide improvements to existing structures or construction of base camps, command posts, and maintenance facilities for use by the MAGTF.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and appropriate references

**STANDARD:** To build/improve facilities to meet or exceed the requirements listed in the design specifications in accordance with the commanders' intent.

**EVENT COMPONENTS:**

1. Plan horizontal construction
2. Conduct engineer reconnaissance
3. Coordinate horizontal construction
4. Construct a hasty/deliberate road or trail
5. Conduct site preparation
6. Construct an expeditionary air field
7. Conduct dust abatement
8. Conduct beachhead improvement

**REFERENCES:**

1. FM 21-10 Field Hygiene and Sanitation
2. FM 21-75 Combat Skills of the Soldier
3. FM 3-06 Urban Operations
4. FM 3-07 Stability Operations and Support Operations
5. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
6. FM 5-100 Engineers in Combat Operations
7. FM 5-103 Field Fortifications
8. FM 5-163 Sewerage
9. FM 5-250 Explosives and Demolitions
10. FM 5-335 Drainage
11. FM 5-34 Engineering Field Data
12. FM 5-412 Project Management
13. FM 5-426 Carpentry
14. FM 5-428 Concrete Masonry
15. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
16. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
17. FM 5-434 Earthmoving Operations
18. FM 5-446 Military Non-Standard Fixed Bridges
19. FM 5-553 General Drafting
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 4-4 Engineer Operations
22. FMFRP 12-51 Engineer Operations
23. GTA 5-7-13 Bridge Classification Booklet
24. GTA 5-7-6 Bridge Design Card
25. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
26. JP 3-34 Engineer Doctrine for Joint Operations
27. MCWP 3-17 Engineer Operations
28. MCWP 3-35.1 Cold Weather Operations
29. MCWP 3-35.2 Mountain Operations
30. MCWP 3-35.3 Military Operations on Urbanized Terrain
31. MCWP 3-35.5 Jungle Operations

- 32. MCWP 3-35.6 Desert Operations
- 33. MCWP 3-41.1 Rear Area Operations
- 34. MCWP 4-11 Combat Service Support
- 35. TM 5-232 Elements of Construction Surveying
- 36. TM 5-760 Interior Wiring

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**ENGR-XENG-5723:** Conduct general engineering operations

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct General Engineering Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required general engineering operations.

**CONDITION:** Given a mission, commanders intent, available resources, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms plan, and security element.

**STANDARD:** To ensure general engineering support of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

- 1. FM 10-52 Water Supply in Theaters of Operation
- 2. FM 10-52-1 Water Supply Point Equipment and Operations
- 3. FM 10-69 Petroleum Supply Point Equipment and Operations
- 4. FM 100-10 Combat Service Support
- 5. FM 100-23-1 Humanitarian Assistance Operations
- 6. FM 20-3 Camouflage
- 7. FM 20-31 Electric Power Generation in the Field
- 8. FM 21-10 Field Hygiene and Sanitation
- 9. FM 21-10-1 Unit Field Sanitation
- 10. FM 21-75 Combat Skills of the Soldier
- 11. FM 3-06 Urban Operations
- 12. FM 3-07 Stability Operations and Support Operations
- 13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
- 14. FM 5-100 Engineers in Combat Operations
- 15. FM 5-101-5-1 Operational Terrain and Symbols
- 16. FM 5-103 Field Fortifications
- 17. FM 5-103 Survivability
- 18. FM 5-163 Sewerage
- 19. FM 5-335 Drainage
- 20. FM 5-34 Engineering Field Data
- 21. FM 5-412 Project Management
- 22. FM 5-422 Engineer Prime Power Operations
- 23. FM 5-424 Theater of Operations Electrical Systems
- 24. FM 5-426 Carpentry
- 25. FM 5-428 Concrete Masonry
- 26. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations

27. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
28. FM 5-434 Earthmoving Operations
29. FM 5-446 Military Non-Standard Fixed Bridges
30. FM 5-553 General Drafting
31. FM 90-3 Desert Operations
32. FM 90-5 Jungle Operations
33. FMFM 13 MAGTF Engineer Operations
34. FMFM 3-1 Command and Staff Action
35. FMFM 4-4 Engineer Operations
36. FMFRP 0-55 Desert Water Supply
37. FMFRP 12-51 Engineer Operations
38. GTA 5-7-13 Bridge Classification Booklet
39. GTA 5-7-6 Bridge Design Card
40. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
41. JP 3-34 Engineer Doctrine for Joint Operations
42. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
43. MCRP 3-17A Engineer Field Data
44. MCRP 3-17B Engineer Forms and Reports
45. MCRP 4-11.1D Field Hygiene and Sanitation
46. MCRP 4-11B Environmental Considerations in Military Operations
47. MCWP 3-1 Ground Combat Operations
48. MCWP 3-17 Engineer Operations
49. MCWP 3-35.1 Cold Weather Operations
50. MCWP 3-35.2 Mountain Operations
51. MCWP 3-35.3 Military Operations on Urbanized Terrain
52. MCWP 3-35.5 Jungle Operations
53. MCWP 3-35.6 Desert Operations
54. MCWP 3-41.1 Rear Area Operations
55. MCWP 3.21.1 Aviation Ground Support
56. MCWP 4-1 Logistics Operations
57. MCWP 4-11 Combat Service Support
58. MCWP 4-11.3 Transportation Operations
59. MCWP 4-11.4 Maintenance Operations
60. MCWP 4-11.6 Bulk Liquid Operations
61. MCWP 4-24 Commander's Guide to Maintenance
62. MCWP 4-25.5 Bulk Liquids Operations
63. MCWP 4-6 MAGTF Supply Operations
64. MCWP 5-1 Marine Corps Planning Process

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**ENGR-DEMO-5801:** Conduct demolitions in support of mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, demolition materials and appropriate references

**STANDARD:** To ensure freedom of movement per the commander's intent.

**EVENT COMPONENTS:**

1. Coordinate demolition operations
2. Plan demolition operations
3. Conduct obstacle reduction
4. Conduct engineer reconnaissance
5. Conduct urban breaching
6. Conduct demolitions in support of horizontal construction

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
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**ENGR-DEMO-5802:** Conduct demolitions in support of counter mobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, demolition materials and appropriate references

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Coordinate demolition operations
2. Plan demolition operations
3. Conduct engineer reconnaissance

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
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**ENGR-MOBL-5803:** Conduct route clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Obstacles may include mines, unexploded ordnance, improvised explosive devices, non-explosive obstacles, and damage to the route that severely limits mobility. The route will only be "cleared" while it remains under the control of friendly forces.

**CONDITION:** Provided a mission, a designated route with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure friendly force mobility on the cleared route [friendly forces are not fixed, turned, blocked, nor disrupted] in accordance with the commanders intent, while the route remains in friendly forces control.

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-170 Engineer Reconnaissance
  3. FM 5-250 Explosives and Demolitions
  4. FM 5-34 Engineer Field Data - Field Expedient Charges
  5. FM 5-36 Route Reconnaissance and Classification
  6. FM 90-13-1 Combined Arms Breaching Operations
  7. FM 90-3 Desert Operations
  8. FM 90-5 Jungle Operations
  9. GTA 5-2-5 Engineer Reconnaissance
  10. GTA 5-7-13 Bridge Classification Booklet
  11. MCRP 3-17A Engineer Field Data
  12. MCRP 3-17B Engineer Forms and Reports
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**ENGR-MOBL-5804:** Conduct area clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide a secure environment for operations in accordance with the commanders intent and mobility plan.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 3-06 Urban Operations
  3. FM 3-07 Stability Operations and Support Operations
  4. FM 34-130 Intelligence Preparation of the Battlefield
  5. FM 5-100 Engineers in Combat Operations
  6. FM 5-101 Mobility
  7. FM 5-101-5-1 Operational Terrain and Symbols
  8. FM 5-170 Engineer Reconnaissance
  9. FM 5-250 Explosives and Demolitions
  10. FM 5-34 Engineer Field Data - Field Expedient Charges
  11. FM 90-13-1 Combined Arms Breaching Operations
  12. FM 90-3 Desert Operations
  13. FM 90-5 Jungle Operations
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**ENGR-MOBL-5805:** Conduct obstacle breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, designated area, tasked organized personnel and equipment, and references.



**STANDARD:** To insure the proper reduction of enemy obstacles to support the commander's intent and concept of operations.

**EVENT COMPONENTS:**

1. Conduct assault breaching operations
2. Conduct expedient gap crossing operations
3. Conduct route sweep operations
4. Conduct urban breaching
5. Conduct engineer reconnaissance
6. Conduct instride breaching operations
7. Conduct covert breaching operations
8. Plan breaching operations
9. Conduct deliberate breaching operations
10. Coordinate breaching operations

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 90-13-1 Combined Arms Breaching Operations
9. FMFM 13 MAGTF Engineer Operations
10. FMFM 13-7 MAGTF Breaching Operations
11. FMFM 4-4 Engineer Operations
12. MCRP 3-17A Engineer Field Data
13. MCRP 3-17B Engineer Forms and Reports
14. MCWP 3-17 Engineer Operations
15. MCWP 3-17.1 River-Crossing Operations
16. MCWP 3-17.3 Breaching Operations
17. MCWP 3-17.3 MAGTF Breaching Operations

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**ENGR-MOBL-5806:** Conduct route sweep operations

**SUPPORTED MET(S):** 2, 3, 5

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a route to be swept, map, task organized personnel and equipment, and references.

**STANDARD:** To ensure all mines, boobytraps, obstacles, and unexploded ordnance are detected, identified, reduced, proofed, and/or marked to provide sufficient mobility to support the concept of operations and commanders intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-170 Engineer Reconnaissance
3. FM 5-250 Explosives and Demolitions
4. FM 5-34 Engineering Field Data

5. FMFM 13 MAGTF Engineer Operations
6. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
7. MCRP 3-17A Engineer Field Data
8. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**EQUIPMENT:** Kevlar helmet, flak vest, AN/PRC 119, AN/PSS 14/12 mine detector, probe, T-tool, compass, protractor, DA FORM 1355-1-R

**MATERIAL:** Engineer tape, concertina wire, barbed wire, engineer stakes, tie wire, mine signs, sandbags

**UNITS/PERSONNEL:** Range safety officer, corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-CMOB-5901:** Create obstacles and barriers

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 2 months

**DESCRIPTION:** Obstacles and barriers can be explosive or non-explosive in nature

**CONDITION:** Given the commander's intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms, an equipment density list and available personnel

**STANDARD:** To create obstacles/ barriers to turn, block, fix, or disrupt the enemy that supports commander's intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 5-100 Engineers in Combat Operations
4. FM 5-102 Countermobility
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 90-1 Countermobility
10. FM 90-3 Desert Operations
11. FM 90-5 Jungle Operations
12. FM 90-7 Combined Arms Obstacle Integration

13. FMFM 13 MAGTF Engineer Operations
14. FMFM 13 MAGTF Engineer Operations
15. FMFM 4-4 Engineer Operations
16. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
17. JP 3-34 Engineer Doctrine for Joint Operations
18. MCRP 3-17A Engineer Field Data
19. MCWP 3-17 Engineer Operations
20. TM 11275-15/3C Characteristics of Engineering Equipment
21. UNIT SOP Unit's Standing Operating Procedures
22. Appropriate Technical Manuals

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**UTIL-XENG-5902:** Provide Tactical Electrical Power

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a Utilities plan, required electrical equipment and personnel,

**STANDARD:** In accordance with the operational order.

**EVENT COMPONENTS:**

1. Supply mobile electric power

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. EM 0086 Generator Sets and Power Units (CD-ROM)
4. EM 0158 Power Supplies, Light Sets, and Battery Chargers
5. EMC Electric Motor Controls by American Technical Publishers, Inc.
6. FM 100-10 Combat Service Support
7. FM 20-3 Camouflage
8. FM 20-31 Electric Power Generation in the Field
9. FM 5-422 Engineer Prime Power Operations
10. FM 5-424 Theater of Operations Electrical Systems
11. FM 55-509-1 Introduction to Marine Electricity
12. FMFM 4-4 Engineer Operations
13. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
14. MCO 5100.29 Marine Corps Safety Program
15. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
16. MCO P5215.17 USMC Technical Publications System
17. MCRP 3-02G First Aid
18. MCRP 5-12.1C Risk Management (Feb 01)
19. MCWP 3-17 Engineer Operations
20. NAVMC 2761 Catalog of Publications
21. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
22. SL-3-00192B Components List for Climbers Set, Tree and Pole (Mar 95)
23. SL-3-00380A Components List for Tools Kit, Electricians TE-33
24. SL-3-01204A Components List for Tool Kit, Lineman's (Mar 98), w/Ch 1 (Apr99)

25. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
26. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
27. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
28. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
29. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
30. TC 11-6 Grounding Techniques
31. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
32. TM 05684C/05685B-12 MEP-3 Generator Set
33. TM 06858B/06859D-12 MEP-5 Generator Set
34. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
35. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
36. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
37. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
38. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
39. TM 11275-15/3C Characteristics of Engineering Equipment
40. TM 11310-15/1E Alternating Current Power Requirements
41. TM 2000-15/4 Power System Reference Manual
42. TM 5-760 Interior Wiring
43. TM 5-765 Electric Power Transmission and Distribution
44. National Electrical Code

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**ENGR-CMOB-5903:** Conduct counter mobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Conduct countermobility planning.
2. Integrate countermobility plan with the concept of operations.
3. Participate in supported unit planning.
4. Complete the engineering portions of the orders
5. Identify what organic and non-organic units are completing each task
6. Develop engineer estimate of supportability.
7. Issue warning orders to subordinate units

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 90-1 Countermobility
  7. FM 90-3 Desert Operations
  8. FM 90-5 Jungle Operations
  9. FM 90-7 Combined Arms Obstacle Integration
  10. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  11. JP 3-34 Engineer Doctrine for Joint Operations
  12. MCRP 3-17B Engineer Forms and Reports
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**ENGR-DEMO-5904:** Conduct demolitions in support of survivability operations

**SUPPORTED MET(S):** 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, demolition materials and appropriate references

**STANDARD:** To meet requirements in accordance with the commander's intent.

**EVENT COMPONENTS:**

1. Coordinate demolition operations
2. Plan demolition operations
3. Conduct engineer reconnaissance

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
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**ENGR-DEMO-5905:** Conduct demolitions in support of expeditionary operations

**SUPPORTED MET(S):** 2, 3, 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, demolition materials, and

appropriate references

**STANDARD:** To achieve desired effects in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Coordinate demolition operations
2. Plan demolition operations
3. Conduct structure reduction
4. Conduct engineer reconnaissance
5. Conduct limited destruction of captured enemy ammunition
6. Destroy equipment
7. Employ demolitions in support of horizontal construction

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
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**ENGR-MOBL-5906:** Conduct construction of tactical landing zones

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Scope of work can include but is not limited to construction, repair, maintenance of expeditionary airfields, existing airfields, and landing zones to accommodate fixed and rotary wing aircraft.

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications and appropriate references

**STANDARD:** To create/repair/maintain TLZ's that meets or exceeds the landing zone requirements listed in the design specifications.

**EVENT COMPONENTS:**

1. Plan construction of tactical landing zones
2. Coordinate construction of tactical landing zones
3. Conduct obstruction removal
4. Conduct engineer reconnaissance

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
8. FMFM 13 MAGTF Engineer Operations
9. FMFM 4-4 Engineer Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports

12. MCWP 3-17 Engineer Operations
13. Appropriate Technical Manuals

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**ENGR-MOBL-5907:** Conduct mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes rules of engagement and supporting arms from the high water mark inland

**STANDARD:** To achieve force projection and conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Maintain organic reserve forces.
2. Issue the order.
3. Orchestrate the execution of mobility operations.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment
22. TM 9-1300-214 Military Explosives
23. UNIT SOP Unit's Standing Operating Procedures

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**UTIL-XENG-5908:** Provide floodlight support

**SUPPORTED MET(S):** 4, 8, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a operations order, required equipment and personnel,

**STANDARD:** To properly illuminate required area.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
  2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
  3. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  4. FM 100-10 Combat Service Support
  5. FM 100-15 Corps (Larger Unit) Operations
  6. FM 100-19 Domestic Support Operations
  7. FM 100-23-1 Humanitarian Assistance Operations
  8. FM 101-10-1\_ Organizational, Technical and Logistical Data
  9. FM 20-3 Camouflage
  10. FM 55-509-1 Introduction to Marine Electricity
  11. FMFM 4-4 Engineer Operations
  12. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  13. MCO 3500.27B Operational Risk Management
  14. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  15. MCWP 3-41.1 Rear Area Operations
  16. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
  17. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
  18. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
  19. TM 4700-15/1H Ground Equipment Record Procedures
  20. Appropriate Equipment Manual
  21. National Electrical Code
  22. Wiring Diagrams
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**ENGR-REC-5909:** Conduct zone reconnaissance

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, and enemy forces within a zone defined by boundaries. A zone reconnaissance normally is assigned when the enemy situation is vague or when information concerning cross-country trafficability is desired.

**CONDITION:** Given a mission, commander's intent, map, designated zone, task organization of personnel and equipment, and references.

**STANDARD:** To conduct a reconnaissance of the specified zone and gather all relevant engineer data and produce an engineer estimate (or designated



products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
13. MCWP 3-17 Engineer Operations
14. MCWP 3-17.4 Engineer Reconnaissance
15. MCWP 3-35.5 Jungle Operations
16. MCWP 3-35.6 Desert Operations

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**UTIL-XENG-5910:** Maintain utilities equipment

**SUPPORTED MET(S):** 4, 6, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** To perform preventive and corrective maintenance on all utilities equipment.

**CONDITION:** Provided equipment, tools, repair parts, supplies and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct pre-deployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification

Handout

3. CFR 82 EPA Section 608
4. CFR 82 EPA Section 609
5. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
6. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
7. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
8. EM 0180 Warranties
9. EMC Electric Motor Controls by American Technical Publishers, Inc.
10. EMR Electric Motor Repair, Third Addition
11. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
12. FM 100-10 Combat Service Support
13. FM 100-14 Risk Management
14. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
15. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
16. Local SOP Local Standard Operating Procedures
17. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
18. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
19. MCO 3500.27B Operational Risk Management
20. MCO 4610.35 USMC Equipment Characteristics File
21. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
22. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
23. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
24. MCO 5100.29 Marine Corps Safety Program
25. MCO 5210.11E Records Management Program for the Marine Corps
26. MCO 5215.1 Marine Corps Directives Management Program
27. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
28. MCO P5215.17 USMC Technical Publications System
29. MCRP 3-02G First Aid
30. MCWP 4-11 Combat Service Support
31. MCWP 4-11.4 Maintenance Operations
32. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
33. MI-09002A-35/1 w/Ch 2 Procedures For Installing Modification Kit on the Tank, Fuel Module ( Sixcon )
34. MI-09003A-35/2 w/ch1 Installation of Retrofit Kit on the Fuel Pump Module ( Sixcon )
35. MRAC Modern Refrigeration & Air Conditioning Text Book
36. NAVMC 2761 Catalog of Publications
37. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
38. SI 10578A-12/1 Warranty Procedures for the Generator, 15kw (Apr 99)
39. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
40. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
41. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
42. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
43. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
44. SL-3 8D486B Pump Assembly 350 GPM
45. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94),

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- Ch 3 (Oct 97), & Ch 4 (Jan 98)
46. SL-3-00192B Components List for Climbers Set, Tree and Pole (Mar 95)
  47. SL-3-04484 w/Ch 1 Repair Kit, Collapsible Fabric Drum ( AAFS )
  48. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  49. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  50. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  51. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  52. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
  53. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
  54. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
  55. SL-3-09467A Pump Assembly, Centrifugal
  56. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  57. SL-4-04486B Repair Parts list, Drum, Fabric, Collapsible ( AAFS )
  58. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
  59. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
  60. SL-4-08922C Pump Unit 125 GPM
  61. TB 43-0134 Battery Disposition and Disposal
  62. TB SIG 222 Solder and Soldering
  63. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  64. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  65. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
  66. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
  67. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
  68. TM 01034D-12/P1 3000 Gallon Tank
  69. TM 01243E-14/1 Laundry Facility, Bare Base
  70. TM 05684C/05685B-12 MEP-3 Generator Set
  71. TM 06858B/06859D-12 MEP-5 Generator Set
  72. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
  73. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  74. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  75. TM 08936A-13&P Forward Area Water Point Supply System
  76. TM 08990A-15&P/1 Sixcon Water Tank Module
  77. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
  78. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)

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79. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
80. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
81. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
82. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
83. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
84. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
85. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
86. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
87. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
88. TM 09777A-14/1 Water Purification Systems
89. TM 10-4320-226-14 350 GPM Pump
90. TM 10-4320-344-10 600 GPM Pump
91. TM 10-4320-344-24 600 GPM Pump
92. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
93. TM 10006A-14/P1 Shower Facility, Bare Base
94. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
95. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
96. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
97. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
98. TM 10488-CD Generator, Trailer Mounted (Oct 00)
99. TM 10596A-13&P Marine Corps Hose Reel System
100. TM 10673A-10/1 Enhanced Refrigeration Unit
101. TM 10673A-12-2 ERU TM Manual
102. TM 10673A-30P-3 ERU Parts Book
103. TM 10802A-14/1 Tactical Water Purification System
104. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
105. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
106. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
107. TM 11275-15/3C Characteristics of Engineering Equipment
108. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
109. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures

- 110. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  - 111. TM 5-4320-266-14 350 GPM Pump
  - 112. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  - 113. TM 5-4320-309-14 125 GPM Pump
  - 114. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
  - 115. TM 9-4110-256-14 Refrigeration Unit, Mechanical 10K BTU, Electrical text book
  - 116. TM 9-4120-371-14 18,000 BTU Air Conditioner
  - 117. TM 9-4120-389-14 36,000 BTU Air Conditioner
  - 118. TM 9-4120-393-14 60,000 BTU Air Conditioner
  - 119. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM
  - 120. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual ( 125 GPM )
  - 121. TM-08922A-24P/2 Pump unit, Centrifugal, Self-priming, 125 GPM
  - 122. UM MCPDS Marine Corps Publications Distribution System Users Manual
  - 123. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  - 124. UM-PLMS Publications Library Management System
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**ENGR-RECN-5911:** Conduct route reconnaissance

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Confirm historical line-of-communications data through on-site reconnaissance to determine critical routes and roads, key terrain impacting on planned/contingency operations. Route reconnaissance includes bridges, roads, fords, ferries, tunnels, airfields, and other transportation related features.

**CONDITION:** Given a mission, commanders' intent, a map, task organization of personnel and equipment, route/road to reconnoiter, and references.

**STANDARD:** To conduct a reconnaissance of the specified route/road and gather all relevant engineer data and produce an engineer estimate (or designated products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

- 1. Execute the order
- 2. Maintain a reserve element

**REFERENCES:**

- 1. 5-446 Military Non-Standard Fixed Bridge
- 2. FM 5-101 Mobility
- 3. FM 5-102 Countermobility
- 4. FM 5-170 Engineer Reconnaissance
- 5. FM 5-34 Engineer Field Data - Field Expedient Charges
- 6. FM 5-36 Route Reconnaissance and Classification
- 7. GTA 5-2-5 Engineer Reconnaissance
- 8. GTA 5-7-13 Bridge Classification Booklet
- 9. JP 3-34 Engineer Doctrine for Joint Operations
- 10. MCRP 3-17A Engineer Field Data

11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 3-17 Engineer Operations

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**UTIL-XENG-5912:** Provide licensing program for utilities equipment.

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** With personnel, supporting documentation, and references

**STANDARD:** To maintain qualified equipment operators.

**EVENT COMPONENTS:**

1. Determine licensing requirements
2. Maintain a units licensing program
3. Monitor licensing program

**REFERENCES:**

1. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
2. TM 11275-15/3C Characteristics of Engineering Equipment
3. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
4. UNIT SOP Unit's Standing Operating Procedures
5. Supported Battalion SOP

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**ENGR-RECN-5913:** Coordinate engineer forces in support of reconnaissance operations

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given commanders intent, operations order, and available resources

**STANDARD:** To task engineer forces to conduct/ support engineer reconnaissance missions in accordance with the commanders intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 5-101 Mobility
2. FM 5-170 Engineer Reconnaissance
3. FM 5-34 Engineering Field Data
4. FM 5-36 Route Reconnaissance and Classification
5. FMFM 13 MAGTF Engineer Operations
6. FMFM 4-4 Engineer Operations
7. GTA 5-2-5 Engineer Reconnaissance
8. JP 3-34 Engineer Doctrine for Joint Operations
9. MCRP 3-17A Engineer Field Data

10. MCRP 3-17B Engineer Forms and Reports
11. MCWP 3-35.1 Cold Weather Operations
12. MCWP 3-35.2 Mountain Operations
13. MCWP 3-35.5 Jungle Operations
14. MCWP 3-35.6 Desert Operations

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**ENGR-RECN-5914:** Conduct area reconnaissance

**SUPPORTED MET(S):** 2, 3, 4, 5, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct reconnaissance in a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area, such as a town, ridgeline, woods, or other feature critical to operations (i.e. a bridge or installation).

**CONDITION:** Given a mission, commander's intent, task organization of personnel and equipment, an area, and references.

**STANDARD:** To conduct an area reconnaissance of the specified area/feature and gather all relevant engineer data and produce an engineer estimate (or designated products IAW unit SOPs or guidance) to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
13. MCWP 3-17 Engineer Operations
14. MCWP 3-17.4 Engineer Reconnaissance

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**ENGR-SURV-5915:** Construct survivability positions

**SUPPORTED MET(S):** 3, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

29 May 07

**DESCRIPTION:** Positions may include but are not limited to; bunkers, vehicle defilades, ECP/VCP's, berms/barriers, hardening of existing structures, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To build survivability positions that meets or exceeds the mission requirements and supports the concept of operations in accordance with the commander's intent.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 5-100 Engineers in Combat Operations
5. FM 5-102 Countermobility
6. FM 5-103 Survivability
7. FM 5-170 Engineer Reconnaissance
8. FM 5-250 Explosives and Demolitions
9. FM 5-34 Engineering Field Data
10. FM 5-426 Carpentry
11. FM 90-3 Desert Operations
12. FM 90-5 Jungle Operations
13. FMFM 13 MAGTF Engineer Operations
14. FMFRP 12-51 Engineer Operations
15. JP 3-34 Engineer Doctrine for Joint Operations
16. MCRP 3-17A Engineer Field Data
17. MCWP 3-17 Engineer Operations
18. MCWP 3-41.1 Rear Area Operations
19. MCWP 4-11 Combat Service Support

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-SURV-5916:** Conduct base defense

**SUPPORTED MET(S):** 3, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Includes but is not limited to; mutually supporting bunkers, fighting positions, non-explosive and explosive obstacles, vehicle defilades,



ECP/VCP's, berms/barriers, HN support, communications, and warning systems, etc.

**CONDITION:** Provided a mission, commander intent, a map, reconnaissance reports, force protection plan, task organization of personnel and equipment, and references

**STANDARD:** To employ positions, obstacles, barriers, and procedures that mitigate the risk of injury to friendly forces from enemy actions in accordance with the commanders intent and concept of operations.

**RELATED EVENTS:**  
1371-SURV-1097

**REFERENCES:**  
1. FM 21-75 Combat Skills of the Soldier  
2. FM 5-103 Survivability  
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-SURV-5917:** Conduct survivability operations

**SUPPORTED MET(S):** 3, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct Survivability Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required survivability operation.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To ensure survivability of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**  
1. Execute the order  
2. Maintain a reserve element

**REFERENCES :**

1. FM 20-32 Mine/Countermine Operations
  2. FM 5-102 Countermobility
  3. FM 5-103 Field Fortifications
  4. FM 5-103 Survivability
  5. FM 5-170 Engineer Reconnaissance
  6. FM 5-250 Explosives and Demolitions
  7. FM 5-335 Drainage
  8. FM 5-34 Engineer Field Data - Field Expedient Charges
  9. FM 5-412 Project Management
  10. FM 5-426 Carpentry
  11. FM 5-428 Concrete Masonry
  12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  14. FM 5-434 Earthmoving Operations
  15. FM 5-446 Military Non-Standard Fixed Bridges
  16. FM 5-553 General Drafting
  17. FM 90-3 Desert Operations
  18. FM 90-5 Jungle Operations
  19. FM 90-7 Combined Arms Obstacle Integration
  20. FMFM 13 MAGTF Engineer Operations
  21. FMFM 3-1 Command and Staff Action
  22. FMFM 4-4 Engineer Operations
  23. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  24. JP 3-34 Engineer Doctrine for Joint Operations
  25. MCRP 3-17A Engineer Field Data
  26. MCRP 3-17B Engineer Forms and Reports
  27. MCWP 4-11 Combat Service Support
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**3006. 4000-LEVEL TRAINING EVENTS**

**ENGR-MOBL-4701:** Repair runway/ LZ operating surfaces

**SUPPORTED MET(S):** 2, 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** These repairs may be required due to enemy or friendly action/ damage, lack of maintenance, poor construction techniques (for existing surfaces), or environmental damage. May be part of Airfield Damage Repair (ADR) or Rapid Runway Repair (RRR) as part of Base Recovery after an Attack (BRAAT).

**CONDITION:** Given a tactical situation, an operations order, commander's intent, an airfield/landing zone requiring repair, personnel and equipment, and references

**STANDARD:** To restore the air field/landing zone operating surfaces to minimum operational capability within the design criteria and the commander's intent.

**EVENT COMPONENTS:**

1. Plan rapid runway repair
2. Coordinate rapid runway repair
3. Conduct crater repair
4. Conduct engineer reconnaissance
5. Conduct spall repair
6. Conduct foreign object debris clearance

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-36 Route Reconnaissance and Classification
6. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
7. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
8. FMFM 4-4 Engineer Operations
9. MCRP 3-17A Engineer Field Data
10. MCRP 3-17B Engineer Forms and Reports
11. MCWP 3-17 Engineer Operations
12. MCWP 3.21.1 Aviation Ground Support

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**ENGR-MOBL-4702:** Conduct gap crossing operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Gap crossing includes both wet and dry gaps. It includes both standard (IRB or MGB) and non-standard (wood, concrete, LOC, other) bridging.

**CONDITION:** Given a mission, commander's intent, a map, task organization of equipment and personnel, and the appropriate references.

**STANDARD:** To provide an avenue of approach, lane, or means across a gap that will meet or exceed military load classification required to support the concept of operations in accordance with the commander's intent.

**EVENT COMPONENTS:**

1. Plan bridging operations
2. Coordinate bridging operations
3. Prepare the bridge sites
4. Assemble the bridge
5. Conduct engineer reconnaissance
6. Disassemble the bridge

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 5-434 Earthmoving Operations
9. FM 5-446 Military Non-Standard Fixed Bridges
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineers
14. GTA 5-7-13 Bridge Classification Booklet
15. GTA 5-7-6 Bridge Design Card
16. MCRP 3-17A Engineer Field Data
17. MCRP 3-17B Engineer Forms and Reports
18. MCWP 3-17 Engineer Operations
19. MCWP 3-17.1 River-Crossing Operations
20. MCWP 3-17.3 Breaching Operations
21. MCWP 3-17.3 MAGTF Breaching Operations
22. TM 5-5420-212-12 Medium Girder Bridge
23. TM 5-5420-212-12-1 Link Reinforcement Set

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**ENGR-XENG-4703:** Conduct vertical construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct vertical construction is to build or provide improvements to existing structures or construction of base camps, command posts, and maintenance facilities for use by the MAGTF.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and appropriate references

**STANDARD:** To build/improve facilities to meet or exceed the requirements listed in the design specifications in accordance with the commander's intent.

**EVENT COMPONENTS:**

1. Plan horizontal construction
2. Conduct engineer reconnaissance
3. Coordinate horizontal construction
4. Construct a hasty/deliberate road or trail
5. Conduct site preparation
6. Construct an expeditionary air field
7. Conduct dust abatement
8. Conduct beachhead improvement

**REFERENCES:**

1. FM 21-10 Field Hygiene and Sanitation
2. FM 21-75 Combat Skills of the Soldier
3. FM 3-06 Urban Operations
4. FM 3-07 Stability Operations and Support Operations
5. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
6. FM 5-100 Engineers in Combat Operations
7. FM 5-103 Field Fortifications
8. FM 5-163 Sewerage
9. FM 5-250 Explosives and Demolitions
10. FM 5-335 Drainage
11. FM 5-34 Engineering Field Data
12. FM 5-412 Project Management
13. FM 5-426 Carpentry
14. FM 5-428 Concrete Masonry
15. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
16. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
17. FM 5-434 Earthmoving Operations
18. FM 5-446 Military Non-Standard Fixed Bridges
19. FM 5-553 General Drafting
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 4-4 Engineer Operations
22. FMFRP 12-51 Engineer Operations
23. GTA 5-7-13 Bridge Classification Booklet
24. GTA 5-7-6 Bridge Design Card
25. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
26. JP 3-34 Engineer Doctrine for Joint Operations
27. MCWP 3-17 Engineer Operations
28. MCWP 3-35.1 Cold Weather Operations
29. MCWP 3-35.2 Mountain Operations
30. MCWP 3-35.3 Military Operations on Urbanized Terrain
31. MCWP 3-35.5 Jungle Operations
32. MCWP 3-35.6 Desert Operations
33. MCWP 3-41.1 Rear Area Operations
34. MCWP 4-11 Combat Service Support

- 35. TM 5-232 Elements of Construction Surveying
- 36. TM 5-760 Interior Wiring

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**ENGR-XENG-4704:** Conduct horizontal construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct horizontal construction is required to shape the terrain to meet the operational requirements of the MAGTF and includes MSR construction and/or maintenance; expeditionary airfields; site preparation for beddown facilities; and ordnance storage facilities.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials and references

**STANDARD:** To construct the assigned project to meet or exceed the requirements listed in the design specifications and the commander's intent.

**EVENT COMPONENTS:**

- 1. Plan horizontal construction
- 2. Conduct engineer reconnaissance
- 3. Coordinate horizontal construction
- 4. Construct a hasty/deliberate road or trail
- 5. Conduct site preparation
- 6. Construct an expeditionary air field
- 7. Conduct dust abatement
- 8. Conduct beachhead improvement

**REFERENCES:**

- 1. FM 5-100 Engineers in Combat Operations
- 2. FM 5-101 Mobility
- 3. FM 5-101-5-1 Operational Terrain and Symbols
- 4. FM 5-103 Survivability
- 5. FM 5-170 Engineer Reconnaissance
- 6. FM 5-250 Explosives and Demolitions
- 7. FM 5-335 Drainage
- 8. FM 5-34 Engineering Field Data
- 9. FM 5-36 Route Reconnaissance and Classification
- 10. FM 5-412 Project Management
- 11. FM 5-428 Concrete Masonry
- 12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
- 13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
- 14. FM 5-434 Earthmoving Operations
- 15. FM 90-3 Desert Operations
- 16. FM 90-5 Jungle Operations
- 17. JP 3-34 Engineer Doctrine for Joint Operations
- 18. MCWP 3-17 Engineer Operations
- 19. MCWP 3-17.4 Engineer Reconnaissance

20. MCWP 3-35.1 Cold Weather Operations
21. MCWP 3-35.2 Mountain Operations
22. MCWP 3-35.3 Military Operations on Urbanized Terrain
23. MCWP 3-35.5 Jungle Operations
24. MCWP 3-35.6 Desert Operations
25. MCWP 3-41.1 Rear Area Operations

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**ENGR-MOBL-4705:** Maneuver a standard military ribbon raft

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a mission, commanders intent, a map, task organization of equipment and personnel, a wet gap, and references

**STANDARD:** To meet the mission requirements while observing safety precautions during all rafting operations in accordance with the mission and commanders intent.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
2. MCRP 3-17A Engineer Field Data
3. MCWP 3-17.1 River-Crossing Operations
4. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
5. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)

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**ENGR-SURV-4706:** Conduct passive security

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Measures include but are not limited to; camouflage, dispersion, hardening installations, concealment, deception, reconstitution, redundancy, detection and warning systems, protective construction, use of natural cover, etc.

**CONDITION:** Given a mission, commander's intent, a map, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To conduct passive rear area or air defense security measures taken to minimize the effectiveness of hostile air/ground or missile threats against friendly forces or assets.

**REFERENCES:**

1. FM 20-3 Camouflage
2. FM 20-32 Mine/Countermining Operations
3. FM 21-75 Combat Skills of the Soldier
4. FM 3-06 Urban Operations

5. FM 3-07 Stability Operations and Support Operations
6. FM 5-100 Engineers in Combat Operations
7. FM 5-102 Countermobility
8. FM 5-103 Field Fortifications
9. FM 5-103 Survivability
10. FM 5-170 Engineer Reconnaissance
11. FM 5-250 Explosives and Demolitions
12. FM 5-34 Engineering Field Data
13. FM 5-36 Route Reconnaissance and Classification
14. FM 5-412 Project Management
15. FM 5-426 Carpentry
16. FM 5-434 Earthmoving Operations
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FMFM 13 MAGTF Engineer Operations
20. FMFM 4-4 Engineer Operations
21. FMFRP 12-51 Engineer Operations
22. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
23. JP 3-34 Engineer Doctrine for Joint Operations
24. MCWP 3-1 Ground Combat Operations
25. MCWP 3-17 Engineer Operations
26. MCWP 3-35.3 Military Operations on Urbanized Terrain
27. MCWP 3-35.5 Jungle Operations
28. MCWP 3-35.6 Desert Operations
29. MCWP 3-41.1 Rear Area Operations
30. MCWP 4-11 Combat Service Support

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**ENGR-XENG-4707:** Conduct general engineering operations

**SUPPORTED MET(S):** 4, 9

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct General Engineering Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required general engineering operations.

**CONDITION:** Given a mission, commanders intent, available resources, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms plan and security element.

**STANDARD:** To ensure general engineering support of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. FM 100-10 Combat Service Support
5. FM 100-23-1 Humanitarian Assistance Operations
6. FM 20-3 Camouflage



7. FM 20-31 Electric Power Generation in the Field
8. FM 21-10 Field Hygiene and Sanitation
9. FM 21-10-1 Unit Field Sanitation
10. FM 21-75 Combat Skills of the Soldier
11. FM 3-06 Urban Operations
12. FM 3-07 Stability Operations and Support Operations
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-100 Engineers in Combat Operations
15. FM 5-101-5-1 Operational Terrain and Symbols
16. FM 5-103 Field Fortifications
17. FM 5-103 Survivability
18. FM 5-163 Sewerage
19. FM 5-335 Drainage
20. FM 5-34 Engineering Field Data
21. FM 5-412 Project Management
22. FM 5-422 Engineer Prime Power Operations
23. FM 5-424 Theater of Operations Electrical Systems
24. FM 5-426 Carpentry
25. FM 5-428 Concrete Masonry
26. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
27. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
28. FM 5-434 Earthmoving Operations
29. FM 5-446 Military Non-Standard Fixed Bridges
30. FM 5-553 General Drafting
31. FM 90-3 Desert Operations
32. FM 90-5 Jungle Operations
33. FMFM 13 MAGTF Engineer Operations
34. FMFM 3-1 Command and Staff Action
35. FMFM 4-4 Engineer Operations
36. FMFRP 0-55 Desert Water Supply
37. FMFRP 12-51 Engineer Operations
38. GTA 5-7-13 Bridge Classification Booklet
39. GTA 5-7-6 Bridge Design Card
40. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
41. JP 3-34 Engineer Doctrine for Joint Operations
42. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
43. MCRP 3-17A Engineer Field Data
44. MCRP 3-17B Engineer Forms and Reports
45. MCRP 4-11.1D Field Hygiene and Sanitation
46. MCRP 4-11B Environmental Considerations in Military Operations
47. MCWP 3-1 Ground Combat Operations
48. MCWP 3-17 Engineer Operations
49. MCWP 3-35.1 Cold Weather Operations
50. MCWP 3-35.2 Mountain Operations
51. MCWP 3-35.3 Military Operations on Urbanized Terrain
52. MCWP 3-35.5 Jungle Operations
53. MCWP 3-35.6 Desert Operations
54. MCWP 3-41.1 Rear Area Operations
55. MCWP 3.21.1 Aviation Ground Support
56. MCWP 4-1 Logistics Operations
57. MCWP 4-11 Combat Service Support
58. MCWP 4-11.3 Transportation Operations

- 59. MCWP 4-11.4 Maintenance Operations
- 60. MCWP 4-11.6 Bulk Liquid Operations
- 61. MCWP 4-24 Commander's Guide to Maintenance
- 62. MCWP 4-25.5 Bulk Liquids Operations
- 63. MCWP 4-6 MAGTF Supply Operations
- 64. MCWP 5-1 Marine Corps Planning Process

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**UTIL-XENG-4708:** Produce Potable Water

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

- 1. EM 0077 Water Purification, Supply, and Related Equipment.
- 2. FM 10-52-1 Water Supply Point Equipment and Operations
- 3. FM 20-3 Camouflage
- 4. FM 5-335 Drainage
- 5. MCO 3500.27B Operational Risk Management
- 6. MCO 4450.12 Storage and Handling of Hazardous Materials
- 7. MCO 5100.29 Marine Corps Safety Program
- 8. MCO P5090.2A Environmental Compliance and Protection Manual
- 9. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
- 10. MCRP 3-02G First Aid
- 11. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
- 12. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
- 13. TC 11-6 Grounding Techniques
- 14. TM 01034D-12/P1 3000 Gallon Tank
- 15. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
- 16. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
- 17. TM 09777A-14/1 Water Purification Systems
- 18. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
- 19. TM 10802A-14/1 Tactical Water Purification System
- 20. TM 5-4320-309-14 125 GPM Pump
- 21. TM 9406-15 Grounding Procedures
- 22. Federal, State, and Local Environmental Regulations

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**UTIL-XENG-4709:** Store Potable Water

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 49 CFR 172.704(a) (3) Hazardous Material Regulations
  2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
  3. EM 0077 Water Purification, Supply, and Related Equipment.
  4. FM 10-52 Water Supply in Theaters of Operation
  5. FM 10-52-1 Water Supply Point Equipment and Operations
  6. FM 20-3 Camouflage
  7. FMFRP 0-55 Desert Water Supply
  8. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
  9. MCO 3500.27B Operational Risk Management
  10. MCO 4450.12 Storage and Handling of Hazardous Materials
  11. MCO 4450.14 Joint Service Manual for Storage and Materials Handling
  12. MCO 5100.29 Marine Corps Safety Program
  13. MCO 5104.3 Marine Corps Radiation Safety Program
  14. MCRP 3-02G First Aid
  15. SL-3 86702D w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
  16. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
  17. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  18. TM 01034D-12/P1 3000 Gallon Tank
  19. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  20. TM 08936A-13&P Forward Area Water Point Supply System
  21. TM 08990A-15&P/1 Sixcon Water Tank Module
  22. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
  23. TM 10-4320-226-14 350 GPM Pump
  24. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
  25. TM 10-4320-343-14 350 GPM Pump
  26. TM 10-4320-344-10 600 GPM Pump
  27. TM 10-4320-344-24 600 GPM Pump
  28. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
  29. TM 10596A-13&P Marine Corps Hose Reel System
  30. TM 5-4320-266-14 350 GPM Pump
  31. TM 5-4320-303-10 600 GPM Pump
  32. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  33. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
  34. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM
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**UTIL-XENG-4710:** Maintain Tactical Water Purification Systems

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies and references

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).

5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES :**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. EMC Electric Motor Controls by American Technical Publishers, Inc.
5. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
6. FM 100-10 Combat Service Support
7. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
8. Local SOP Local Standard Operating Procedures
9. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
10. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
11. MCO 3500.27B Operational Risk Management
12. MCO 4610.35 USMC Equipment Characteristics File
13. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
14. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
15. MCO 5100.29 Marine Corps Safety Program
16. MCO 5210.11E Records Management Program for the Marine Corps
17. MCO 5215.1 Marine Corps Directives Management Program
18. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
19. MCO P5215.17 USMC Technical Publications System
20. MCRP 3-02G First Aid
21. MCWP 4-11 Combat Service Support
22. MCWP 4-11.4 Maintenance Operations
23. NAVMC 2761 Catalog of Publications
24. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
25. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
26. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
27. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
28. SL-3 8D486B Pump Assembly 350 GPM
29. SL-3-04484 w/Ch 1 Repair Kit, Collapsible Fabric Drum ( AAFS )
30. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
31. SL-3-09467A Pump Assembly, Centrifugal
32. SL-4-04486B Repair Parts list, Drum, Fabric, Collapsible ( AAFS )
33. SL-4-08922C Pump Unit 125 GPM
34. TB 43-0134 Battery Disposition and Disposal
35. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
36. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
37. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
38. TM 01034D-12/P1 3000 Gallon Tank
39. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM

40. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  41. TM 09777A-14/1 Water Purification Systems
  42. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
  43. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
  44. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
  45. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  46. TM 10802A-14/1 Tactical Water Purification System
  47. TM 11275-15/3C Characteristics of Engineering Equipment
  48. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  49. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  50. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  51. TM 5-4320-309-14 125 GPM Pump
  52. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual ( 125 GPM )
  53. TM-08922A-24P/2 Pump unit, Centrifugal, Self-priming, 125 GPM
  54. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  55. UM-PLMS Publications Library Management System
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**UTIL-XENG-4711:** Maintain Hygiene Equipment

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies and references

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
5. FM 100-10 Combat Service Support
6. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
7. Local SOP Local Standard Operating Procedures

8. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
9. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
10. MCO 3500.27B Operational Risk Management
11. MCO 4610.35 USMC Equipment Characteristics File
12. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
13. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
14. MCO 5100.29 Marine Corps Safety Program
15. MCO 5210.11E Records Management Program for the Marine Corps
16. MCO 5215.1 Marine Corps Directives Management Program
17. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
18. MCO P5215.17 USMC Technical Publications System
19. MCRP 3-02G First Aid
20. MCWP 4-11 Combat Service Support
21. MCWP 4-11.4 Maintenance Operations
22. NAVMC 2761 Catalog of Publications
23. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
24. TB 43-0134 Battery Disposition and Disposal
25. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
26. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
27. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
28. TM 01034D-12/P1 3000 Gallon Tank
29. TM 01243E-14/1 Laundry Facility, Bare Base
30. TM 10006A-14/P1 Shower Facility, Bare Base
31. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
32. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
33. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
34. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
35. TM 11275-15/3C Characteristics of Engineering Equipment
36. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
37. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
38. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
39. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual ( 125 GPM )
40. UM MCPDS Marine Corps Publications Distribution System Users Manual
41. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
42. UM-PLMS Publications Library Management System

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**UTIL-XENG-4712:** Maintain Environmental Control Units

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies and references

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
3. CFR 82 EPA Section 608
4. CFR 82 EPA Section 609
5. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
6. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
7. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
8. EM 0180 Warranties
9. EMC Electric Motor Controls by American Technical Publishers, Inc.
10. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
11. FM 100-10 Combat Service Support
12. Local SOP Local Standard Operating Procedures
13. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
14. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
15. MCO 3500.27B Operational Risk Management
16. MCO 4610.35 USMC Equipment Characteristics File
17. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
18. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
19. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
20. MCO 5100.29 Marine Corps Safety Program
21. MCO 5210.11E Records Management Program for the Marine Corps
22. MCO 5215.1 Marine Corps Directives Management Program
23. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
24. MCO P5215.17 USMC Technical Publications System
25. MCRP 3-02G First Aid
26. MCWP 4-11 Combat Service Support
27. MCWP 4-11.4 Maintenance Operations
28. MRAC Modern Refrigeration & Air Conditioning Text Book
29. NAVMC 2761 Catalog of Publications
30. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
31. TB SIG 222 Solder and Soldering

32. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
33. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
34. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
35. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
36. TM 10673A-10/1 Enhanced Refrigeration Unit
37. TM 10673A-12-2 ERU TM Manual
38. TM 10673A-30P-3 ERU Parts Book
39. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
40. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
41. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
42. TM 11275-15/3C Characteristics of Engineering Equipment
43. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
44. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
45. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
46. TM 9-4110-256-14 Refrigeration Unit, Mechanical 10K BTU, Electrical text book
47. TM 9-4120-371-14 18,000 BTU Air Conditioner
48. TM 9-4120-389-14 36,000 BTU Air Conditioner
49. TM 9-4120-393-14 60,000 BTU Air Conditioner
50. UM MCPDS Marine Corps Publications Distribution System Users Manual
51. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
52. UM-PLMS Publications Library Management System

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**UTIL-XENG-4713:** Maintain Refrigeration Systems

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies and references

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).



**REFERENCES :**

1. 3080-50 Corrosion Control Procedures
2. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
3. CFR 82 EPA Section 608
4. CFR 82 EPA Section 609
5. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
6. EM 0180 Warranties
7. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
8. FM 100-10 Combat Service Support
9. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
10. Local SOP Local Standard Operating Procedures
11. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
12. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
13. MCO 3500.27B Operational Risk Management
14. MCO 4610.35 USMC Equipment Characteristics File
15. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
16. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
17. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
18. MCO 5100.29 Marine Corps Safety Program
19. MCO 5210.11E Records Management Program for the Marine Corps
20. MCO 5215.1 Marine Corps Directives Management Program
21. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
22. MCO P5215.17 USMC Technical Publications System
23. MCRP 3-02G First Aid
24. MCWP 4-11 Combat Service Support
25. MCWP 4-11.4 Maintenance Operations
26. MRAC Modern Refrigeration & Air Conditioning Text Book
27. NAVMC 2761 Catalog of Publications
28. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
29. TB SIG 222 Solder and Soldering
30. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
31. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
32. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
33. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
34. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
35. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
36. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)

37. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
  38. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  39. TM 10673A-10/1 Enhanced Refrigeration Unit
  40. TM 10673A-12-2 ERU TM Manual
  41. TM 10673A-30P-3 ERU Parts Book
  42. TM 11275-15/3C Characteristics of Engineering Equipment
  43. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  44. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  45. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  46. UM MCPDS Marine Corps Publications Distribution System Users Manual
  47. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  48. UM-PLMS Publications Library Management System
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**FUEL-XENG-4714:** Identify Fuel Testing Requirements

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Identify Fuel Testing Requirements.

**CONDITION:** Provided a mission order, required testing equipment, and current references.

**STANDARD:** To meet established specifications tested by American Society for Testing Materials (ASTM) methods.

**REFERENCES:**

1. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  2. FM 10-67-2 Petroleum Laboratory Testing and Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  4. ULSS-00 3089-15 TPLM
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**FUEL-XENG-4715:** Coordinate Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Coordinate Bulk Petroleum Operations,

**CONDITION:** Given a mission order, location of the operation, estimated fuel requirements, personnel, and required equipment.

**STANDARD:** to support mission requirements.

**EVENT COMPONENTS:**

1. Supervise Fuel Systems Communications Plan
2. Prepare Fuel Distribution Plan

3. Conduct Petroleum Laboratory Quality Surveillance and Control Program

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-68 Aircraft Refueling
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**FUEL-XENG-4716:** Direct Bulk Petroleum Site Construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Direct Bulk Petroleum Site Construction.

**CONDITION:** Provided a fuel distribution plan with a system layout, necessary equipment, engineer equipment operators, and references.

**STANDARD:** To ensure proper set-up for bulk petroleum operations.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**FUEL-XENG-4717:** Employ Bulk Petroleum Distribution Systems

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Employ bulk petroleum distribution systems,

**CONDITION:** Provided a mission order, a fuel distribution system plan, equipment, materials, proper personnel, and current references.

**STANDARD:** to support the fuel requirements specified in the order.

**EVENT COMPONENTS:**

1. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
-

**FUEL-XENG-4718:** Receive Petroleum Product

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Receive Petroleum Product.

**CONDITION:** Provided the required operations order, bulk petroleum equipment, trained personnel, and references.

**STANDARD:** to support mission requirements.

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**FUEL-XENG-4719:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage.

**CONDITION:** Provided containers of POL, storage area for POL, usage records, and references.

**STANDARD:** To ensure correct and efficient consumption, and safe storage of POL until the required amounts are on hand to support the mission per the current references.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-4720:** Provide Tactical Bulk Petroleum Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Provide Tactical Bulk Fuel Storage.

**CONDITION:** Given an operations order and estimated fuel requirements.

**STANDARD:** To sustain bulk petroleum operations.

**EVENT COMPONENTS:**

1. Provide Fuel Consumption Estimates to Higher Headquarters
2. Collate Fuel Requirements

3. Prepare Preliminary Environmental Assessments
4. Analyze Bulk Fuel Factors Affecting Operations and Exercise

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-69 Petroleum Supply Point Equipment and Operations
3. MCWP 4-11.6 Bulk Liquid Operations
4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**FUEL-XENG-4721:** Conduct Tactical Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct Bulk Petroleum Operations.

**CONDITION:** Given a mission order, location of operation, estimated fuel requirements, required personnel and equipment, a communications plan, necessary support equipment, and current references.

**STANDARD:** To provide uninterrupted fuel support per mission requirements.

**EVENT COMPONENTS:**

1. Develop Bulk Fuel Site Rear Area Security Plan
2. Manage Procedures Required to Change Product Types
3. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-68 Aircraft Refueling
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. MCWP 4-25.5 Bulk Liquids Operations
5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**FUEL-XENG-4722:** Establish a Petroleum Dispensing Point

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Establish a Petroleum Dispensing Point.

**CONDITION:** Provided a tactical fuel system, operations order, required personnel, and references.

**STANDARD:** To ensure using units receive the necessary fuel for the mission.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11 Combat Service Support
  3. MCWP 4-25.5 Bulk Liquids Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**ENGR-MOBL-4801:** Conduct obstacle breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, designated area, tasked organized personnel and equipment, and references.

**STANDARD:** To insure the proper reduction of enemy obstacles to support the commander's intent and concept of operations.

**EVENT COMPONENTS:**

1. Conduct assault breaching operations
2. Conduct expedient gap crossing operations
3. Conduct route sweep operations
4. Conduct urban breaching
5. Conduct engineer reconnaissance
6. Conduct instride breaching operations
7. Conduct covert breaching operations
8. Plan breaching operations
9. Conduct deliberate breaching operations
10. Coordinate breaching operations

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FM 5-101 Mobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. FM 5-36 Route Reconnaissance and Classification
  8. FM 90-13-1 Combined Arms Breaching Operations
  9. FMFM 13 MAGTF Engineer Operations
  10. FMFM 13-7 MAGTF Breaching Operations
  11. FMFM 4-4 Engineer Operations
  12. MCRP 3-17A Engineer Field Data
  13. MCRP 3-17B Engineer Forms and Reports
  14. MCWP 3-17 Engineer Operations
  15. MCWP 3-17.1 River-Crossing Operations
  16. MCWP 3-17.3 Breaching Operations
  17. MCWP 3-17.3 MAGTF Breaching Operations
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**ENGR-MOBL-4802:** Breach obstacle(s) in support of maneuver

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Obstacle Clearance Detachment (OCD) may be task organized with Assault Breacher Vehicles with linear demolition charges, M9 Armored Combat Excavators (or other earthmoving equipment), Joint Assault Bridges, Amphibious Assault Vehicles (with or without towed or internal linear demolition charges), and other vehicles equipment as the situation may dictate.

**CONDITION:** Provided a tactical scenario, mission, a minefield (or other suitable obstacle), a task-organized Obstacle Clearance Detachment with Linear Demolition Charges and references

**STANDARD:** Reduce, proof, and mark a lane(s) through a minefield/obstacle in accordance with the commander's intent, while observing safety precautions

**RELATED EVENTS:**  
1371-MOBL-1001

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 21-75 Combat Skills of the Soldier
3. FM 5-101 Mobility
4. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System

**SUPPORT REQUIREMENTS:**

**ORDNANCE:**

<u>DODIC</u>	<u>Quantity</u>
J143 Rocket Motor, 5-inch MK22 Mod 4	
M913 Charge, Demolition High Explosive Li	
M914 Charge, Demolition Inert Linear M68A	

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**EQUIPMENT:** Kevlar helmet, flak vest, hearing protection, demolition kit, AN/PRC 119, firing device (M34, MK152 remote firing device, CD450-4J blasting machine

**MATERIAL:** Engineer stakes, rope, sledge hammer, stake driver, gloves

**UNITS/PERSONNEL:** Range safety officer, corpsman

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**ENGR-MOBL-4803:** Conduct route sweep operations

**SUPPORTED MET(S):** 2, 5

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commanders' intent, a route to be swept, map, task organized personnel and equipment, and references.

**STANDARD:** To ensure all mines, boobytraps, obstacles, and unexploded ordnance are detected, identified, reduced, proofed, and/or marked to provide sufficient mobility to support the concept of operations and commanders intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-170 Engineer Reconnaissance
3. FM 5-250 Explosives and Demolitions
4. FM 5-34 Engineering Field Data
5. FMFM 13 MAGTF Engineer Operations
6. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
7. MCRP 3-17A Engineer Field Data
8. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**EQUIPMENT:** Kevlar helmet, flak vest, AN/PRC 119, AN/PSS 14/12 mine detector, probe, T-tool, compass, protractor, DA FORM 1355-1-R

**MATERIAL:** Engineer tape, concertina wire, barbed wire, engineer stakes, tie wire, mine signs, sandbags

**UNITS/PERSONNEL:** Range safety officer, corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-MOBL-4804:** Conduct area clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide a secure environment for operations in accordance with the commanders intent and mobility plan.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations



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3. FM 3-07 Stability Operations and Support Operations
4. FM 34-130 Intelligence Preparation of the Battlefield
5. FM 5-100 Engineers in Combat Operations
6. FM 5-101 Mobility
7. FM 5-101-5-1 Operational Terrain and Symbols
8. FM 5-170 Engineer Reconnaissance
9. FM 5-250 Explosives and Demolitions
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 90-13-1 Combined Arms Breaching Operations
12. FM 90-3 Desert Operations
13. FM 90-5 Jungle Operations

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**ENGR-MOBL-4805:** Conduct urban breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Means of breaching may include but is not limited to mechanical, explosive, or ballistic.

**CONDITION:** Given a mission, commanders intent, task organized personnel, a target, engineer tools and equipment, demolition tools and equipment, explosives and/or shotgun with ammunition, and references.

**STANDARD:** To penetrate the target 100% to allow follow on forces to make an assault through the created breach, while limiting collateral damage.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
2. FM 3-06 Urban Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-34 Engineer Field Data - Field Expedient Charges
7. SWO 60-AA-MMA-010 Demolition Materials
8. TM 9-1300-206 Explosive Standards
9. TM 9-1300-214 Military Explosives
10. Guidebook for Assault Entry Techniques
11. Urban Mobility Engineer Guidebook

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**ENGR-MOBL-4806:** Conduct route clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Obstacles may include mines, unexploded ordnance, improvised explosive devices, non-explosive obstacles, and damage to the route that severely limits mobility. The route will only be "cleared" while it remains under the control of friendly forces.

**CONDITION:** Provided a mission, a designated route with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure friendly force mobility on the cleared route [friendly forces are not fixed, turned, blocked, nor disrupted] in accordance with the commanders intent, while the route remains in friendly forces control.

**REFERENCES:**

1. FM 5-101 Mobility
2. FM 5-170 Engineer Reconnaissance
3. FM 5-250 Explosives and Demolitions
4. FM 5-34 Engineer Field Data - Field Expedient Charges
5. FM 5-36 Route Reconnaissance and Classification
6. FM 90-13-1 Combined Arms Breaching Operations
7. FM 90-3 Desert Operations
8. FM 90-5 Jungle Operations
9. GTA 5-2-5 Engineer Reconnaissance
10. GTA 5-7-13 Bridge Classification Booklet
11. MCRP 3-17A Engineer Field Data
12. MCRP 3-17B Engineer Forms and Reports

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**ENGR-CMOB-4901:** Conduct countermobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Conduct countermobility planning.
2. Integrate countermobility plan with the concept of operations.
3. Participate in supported unit planning.
4. Complete the engineering portions of the orders
5. Identify what organic and nonorganic units are completing each task
6. Develop engineer estimate of supportability.
7. Issue warning orders to subordinate units

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 90-1 Countermobility

7. FM 90-7 Combined Arms Obstacle Integration
8. MCRP 3-17B Engineer Forms and Reports

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**ENGR-MOBL-4902:** Conduct mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes rules of engagement and supporting arms from the high water mark inland.

**STANDARD:** To achieve force projection and conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Maintain organic reserve forces.
2. Issue the order.
3. Orchestrate the execution of mobility operations.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment
22. TM 9-1300-214 Military Explosives
23. UNIT SOP Unit's Standing Operating Procedures

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**ENGR-MOBL-4903:** Conduct construction of tactical landing zones

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Scope of work can include but is not limited to construction, repair, maintenance of landing zones to accommodate rotary wing aircraft.

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications and appropriate references

**STANDARD:** To create/repair/maintain TLZ's that meets or exceeds the landing zone requirements listed in the design specifications.

**EVENT COMPONENTS:**

1. Plan construction of tactical landing zones
2. Coordinate construction of tactical landing zones
3. Conduct obstruction removal
4. Conduct engineer reconnaissance

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FM 5-101 Mobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  8. FMFM 13 MAGTF Engineer Operations
  9. FMFM 4-4 Engineer Operations
  10. MCRP 3-17A Engineer Field Data
  11. MCRP 3-17B Engineer Forms and Reports
  12. MCWP 3-17 Engineer Operations
  13. Appropriate Technical Manuals
- 

**ENGR-RECN-4904:** Conduct zone reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, enemy forces within a zone defined by boundaries. A zone reconnaissance normally is assigned when the enemy situation is vague or when information concerning cross-country trafficability is desired.

**CONDITION:** Given a mission, commander's intent, map, designated zone, task organization of personnel and equipment, and references.

**STANDARD:** To conduct a reconnaissance of the specified zone and gather all relevant engineer data and produce engineer reports/forms or designated products IAW unit SOPs or guidance to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
  2. FM 5-101 Mobility
  3. FM 5-102 Countermobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. GTA 5-2-5 Engineer Reconnaissance
  8. GTA 5-7-13 Bridge Classification Booklet
  9. JP 3-34 Engineer Doctrine for Joint Operations
  10. MCRP 3-17A Engineer Field Data
  11. MCRP 3-17B Engineer Forms and Reports
  12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
  13. MCWP 3-17 Engineer Operations
  14. MCWP 3-17.4 Engineer Reconnaissance
  15. MCWP 3-35.5 Jungle Operations
  16. MCWP 3-35.6 Desert Operations
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**ENGR-REC-4905:** Conduct route reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Confirm historical line-of-communications data through on-site reconnaissance to determine critical routes and roads, key terrain impacting on planned/contingency operations. Route reconnaissance includes bridges roads, fords, ferries, tunnels, airfields, and other transportation related features.

**CONDITION:** Given a mission, commanders' intent, a map, task organization of personnel and equipment, route/road to reconnoiter and references

**STANDARD:** To conduct a reconnaissance of the specified route/road and gather all relevant engineer data and produce form/reports or designated products IAW unit SOPs or guidance, to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification

7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 3-17 Engineer Operations

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**ENGR-RECN-4906:** Conduct area reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct reconnaissance in a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area, such as a town, ridgeline, woods, or other feature critical to operations( i.e. a bridge or installation).

**CONDITION:** Given a mission, commander's intent, task organization of personnel and equipment, an area, and references.

**STANDARD:** To conduct an area reconnaissance of the specified area/feature and gather all relevant engineer data and produce the engineer forms/reports or designated products IAW unit SOPs or guidance to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
13. MCWP 3-17 Engineer Operations
14. MCWP 3-17.4 Engineer Reconnaissance

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**ENGR-SURV-4907:** Conduct survivability operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct Survivability Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required survivability operation.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To ensure survivability of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-103 Field Fortifications
4. FM 5-103 Survivability
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-335 Drainage
8. FM 5-34 Engineer Field Data - Field Expedient Charges
9. FM 5-412 Project Management
10. FM 5-426 Carpentry
11. FM 5-428 Concrete Masonry
12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
14. FM 5-434 Earthmoving Operations
15. FM 5-446 Military Non-Standard Fixed Bridges
16. FM 5-553 General Drafting
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FM 90-7 Combined Arms Obstacle Integration
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 3-1 Command and Staff Action
22. FMFM 4-4 Engineer Operations
23. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
24. JP 3-34 Engineer Doctrine for Joint Operations
25. MCRP 3-17A Engineer Field Data
26. MCRP 3-17B Engineer Forms and Reports
27. MCWP 4-11 Combat Service Support

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**ENGR-XENG-4908:** Conduct demolition and obstacle removal

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** To conduct demolition and to provide for clearance of obstacles from an operational area for the construction of facilities in the support of the MAGTF.

**CONDITION:** Provided a mission, a designated area with known/ potential/ suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide clear area for the construction of facilities in accordance with the commanders' intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 34-130 Intelligence Preparation of the Battlefield
5. FM 5-100 Engineers in Combat Operations
6. FM 5-101 Mobility
7. FM 5-101-5-1 Operational Terrain and Symbols
8. FM 5-170 Engineer Reconnaissance
9. FM 5-250 Explosives and Demolitions
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
12. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
13. FM 90-13-1 Combined Arms Breaching Operations
14. FM 90-3 Desert Operations
15. FM 90-5 Jungle Operations
16. JP 3-34 Engineer Doctrine for Joint Operations
17. MCWP 3-35.2 Mountain Operations
18. MCWP 3-35.3 Military Operations on Urbanized Terrain
19. MCWP 3-35.5 Jungle Operations
20. MCWP 3-35.6 Desert Operations
21. MCWP 3-41.1 Rear Area Operations

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**ENGR-CMOB-4909:** Create obstacles and barriers

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 2 months

**DESCRIPTION:** Obstacles and barriers can be explosive or non-explosive in nature

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms, an equipment density list and available personnel

**STANDARD:** To create obstacles/barriers to turn, block, fix, or disrupt the enemy that supports commanders' intent.



**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 3-06 Urban Operations
  3. FM 5-100 Engineers in Combat Operations
  4. FM 5-102 Countermobility
  5. FM 5-170 Engineer Reconnaissance
  6. FM 5-250 Explosives and Demolitions
  7. FM 5-34 Engineer Field Data - Field Expedient Charges
  8. FM 5-36 Route Reconnaissance and Classification
  9. FM 90-1 Countermobility
  10. FM 90-3 Desert Operations
  11. FM 90-5 Jungle Operations
  12. FM 90-7 Combined Arms Obstacle Integration
  13. FMFM 13 MAGTF Engineer Operations
  14. FMFM 13 MAGTF Engineer Operations
  15. FMFM 4-4 Engineer Operations
  16. MCRP 3-17A Engineer Field Data
  17. MCWP 3-17 Engineer Operations
  18. TM 11275-15/3C Characteristics of Engineering Equipment
  19. UNIT SOP Unit's Standing Operating Procedures
  20. Appropriate Technical Manuals
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**ENGR-SURV-4910:** Conduct base defense

**SUPPORTED MET(S):** 3, 9

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Includes but is not limited to; mutually supporting bunkers, fighting positions, non-explosive and explosive obstacles, vehicle defilades, ECP/VCP's, berms/barriers, HN support, communications, warning systems, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, force protection plan, task organization of personnel and equipment, and references.

**STANDARD:** To employ positions, obstacles, barriers, and procedures that mitigate the risk of injury to friendly forces from enemy actions in accordance with the commanders intent and concept of operations.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 5-103 Survivability
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRACTOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-SURV-4911:** Construct survivability positions

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Positions may include but are not limited to; bunkers, vehicle defilades, ECP/VCP's, berms/barriers, hardening of existing structures, etc.

**CONDITION:** Provided a mission, commander's intent, a map, reconnaissance reports, survivability plan, a task organization of personnel and equipment, and references.

**STANDARD:** To build survivability positions that meets or exceeds the mission requirements and supports the concept of operations in accordance with the commanders' intent.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 5-100 Engineers in Combat Operations
5. FM 5-102 Countermobility
6. FM 5-103 Survivability
7. FM 5-170 Engineer Reconnaissance
8. FM 5-250 Explosives and Demolitions
9. FM 5-34 Engineering Field Data
10. FM 5-426 Carpentry
11. FM 90-3 Desert Operations
12. FM 90-5 Jungle Operations
13. FMFM 13 MAGTF Engineer Operations
14. FMFRP 12-51 Engineer Operations
15. JP 3-34 Engineer Doctrine for Joint Operations
16. MCRP 3-17A Engineer Field Data
17. MCWP 3-17 Engineer Operations
18. MCWP 3-41.1 Rear Area Operations
19. MCWP 4-11 Combat Service Support

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRATOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**UTIL-XENG-4912:** Establish Tactical Power Distribution System

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
  2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
  3. EM 0086 Generator Sets and Power Units (CD-ROM)
  4. FM 20-3 Camouflage
  5. FM 20-31 Electric Power Generation in the Field
  6. FM 5-422 Engineer Prime Power Operations
  7. FM 5-424 Theater of Operations Electrical Systems
  8. MCO 3500.27B Operational Risk Management
  9. MCRP 3-02G First Aid
  10. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  11. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
  12. TC 11-6 Grounding Techniques
  13. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  14. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
  15. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
  16. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  17. TM 11275-15/3C Characteristics of Engineering Equipment
  18. TM 2000-15/4 Power System Reference Manual
  19. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  20. TM 5-760 Interior Wiring
  21. TM 5-765 Electric Power Transmission and Distribution
  22. TM 9406-15 Grounding Procedures
  23. UM 4790-5 Users Manual MIMMS
  24. UM-PLMS Publications Library Management System
  25. National Electrical Code
  26. Wiring Diagrams
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**UTIL-XENG-4913:** Maintain Tactical Power Distribution System

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. FM 100-10 Combat Service Support
5. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
6. Local SOP Local Standard Operating Procedures
7. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
8. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
9. MCO 3500.27B Operational Risk Management
10. MCO 4610.35 USMC Equipment Characteristics File
11. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
12. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
13. MCO 5100.29 Marine Corps Safety Program
14. MCO 5210.11E Records Management Program for the Marine Corps
15. MCO 5215.1 Marine Corps Directives Management Program
16. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
17. MCO P5215.17 USMC Technical Publications System
18. MCRP 3-02G First Aid
19. MCWP 4-11 Combat Service Support
20. MCWP 4-11.4 Maintenance Operations
21. NAVMC 2761 Catalog of Publications
22. TB SIG 222 Solder and Soldering
23. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
24. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
25. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
26. TM 11275-15/3C Characteristics of Engineering Equipment
27. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
28. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
29. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
30. UM MCPDS Marine Corps Publications Distribution System Users Manual

31. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
32. UM-PLMS Publications Library Management System

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**UTIL-XENG-4914:** Maintain Utilities Electrical Equipment

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
4. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
5. EM 0180 Warranties
6. EMC Electric Motor Controls by American Technical Publishers, Inc.
7. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
8. FM 100-10 Combat Service Support
9. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
10. Local SOP Local Standard Operating Procedures
11. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
12. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
13. MCO 3500.27B Operational Risk Management
14. MCO 4610.35 USMC Equipment Characteristics File
15. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
16. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
17. MCO 5100.29 Marine Corps Safety Program
18. MCO 5210.11E Records Management Program for the Marine Corps
19. MCO 5215.1 Marine Corps Directives Management Program
20. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
21. MCO P5215.17 USMC Technical Publications System
22. MCRP 3-02G First Aid

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23. MCWP 4-11 Combat Service Support
24. MCWP 4-11.4 Maintenance Operations
25. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
26. NAVMC 2761 Catalog of Publications
27. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
28. SI 10578A-12/1 Warranty Procedures for the Generator, 15kw (Apr 99)
29. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
30. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
31. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
32. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
33. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
34. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
35. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
36. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
37. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
38. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
39. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
40. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
41. TB 43-0134 Battery Disposition and Disposal
42. TB SIG 222 Solder and Soldering
43. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
44. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
45. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
46. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr 75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86), Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
47. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
48. TM 05684C/05685B-12 MEP-3 Generator Set
49. TM 06858B/06859D-12 MEP-5 Generator Set
50. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
51. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)

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52. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
  53. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
  54. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
  55. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
  56. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
  57. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
  58. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
  59. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
  60. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
  61. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
  62. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
  63. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
  64. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  65. TM 10488-CD Generator, Trailer Mounted (Oct 00)
  66. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
  67. TM 11275-15/3C Characteristics of Engineering Equipment
  68. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  69. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  70. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  71. UM MCPDS Marine Corps Publications Distribution System Users Manual
  72. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  73. UM-PLMS Publications Library Management System
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**3007. 3000-LEVEL TRAINING EVENTS**

**ENGR-MOBL-3701:** Conduct gap crossing operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Gap crossing includes both wet and dry gaps. It includes limited non-standard (timber rope) bridging.

**CONDITION:** Given a mission, commander's intent, a map, task organization of equipment and personnel, and the appropriate references.

**STANDARD:** To provide an avenue of approach, lane, or means across a gap that will meet or exceed military load classification required to support the concept of operations in accordance with the commanders' intent.

**EVENT COMPONENTS:**

1. Plan bridging operations
2. Coordinate bridging operations
3. Prepare the bridge sites
4. Assemble the bridge
5. Conduct engineer reconnaissance
6. Disassemble the bridge

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FM 5-101 Mobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. FM 5-36 Route Reconnaissance and Classification
  8. FM 5-434 Earthmoving Operations
  9. FM 5-446 Military Non-Standard Fixed Bridges
  10. FM 90-13-1 Combined Arms Breaching Operations
  11. FMFM 13 MAGTF Engineer Operations
  12. FMFM 13-7 MAGTF Breaching Operations
  13. FMFM 4-4 Engineer Operations
  14. GTA 5-7-13 Bridge Classification Booklet
  15. GTA 5-7-6 Bridge Design Card
  16. MCRP 3-17A Engineer Field Data
  17. MCRP 3-17B Engineer Forms and Reports
  18. MCWP 3-17 Engineer Operations
  19. MCWP 3-17.1 River-Crossing Operations
  20. MCWP 3-17.3 Breaching Operations
  21. MCWP 3-17.3 MAGTF Breaching Operations
  22. TM 5-5420-212-12 Medium Girder Bridge
  23. TM 5-5420-212-12-1 Link Reinforcement Set
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**ENGR-XENG-3702:** Conduct general engineering operations

**SUPPORTED MET(S):** None

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct General Engineering Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required general engineering operations.

**CONDITION:** Given a mission, commanders intent, available resources, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms plan and security element.

**STANDARD:** To ensure general engineering support of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. FM 100-10 Combat Service Support
5. FM 100-23-1 Humanitarian Assistance Operations
6. FM 20-3 Camouflage
7. FM 20-31 Electric Power Generation in the Field
8. FM 21-10 Field Hygiene and Sanitation
9. FM 21-10-1 Unit Field Sanitation
10. FM 21-75 Combat Skills of the Soldier
11. FM 3-06 Urban Operations
12. FM 3-07 Stability Operations and Support Operations
13. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
14. FM 5-100 Engineers in Combat Operations
15. FM 5-101-5-1 Operational Terrain and Symbols
16. FM 5-103 Field Fortifications
17. FM 5-103 Survivability
18. FM 5-163 Sewerage
19. FM 5-335 Drainage
20. FM 5-34 Engineering Field Data
21. FM 5-412 Project Management
22. FM 5-422 Engineer Prime Power Operations
23. FM 5-424 Theater of Operations Electrical Systems
24. FM 5-426 Carpentry
25. FM 5-428 Concrete Masonry
26. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
27. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
28. FM 5-434 Earthmoving Operations
29. FM 5-446 Military Non-Standard Fixed Bridges
30. FM 5-553 General Drafting
31. FM 90-3 Desert Operations
32. FM 90-5 Jungle Operations
33. FMFM 13 MAGTF Engineer Operations

34. FMFM 3-1 Command and Staff Action
  35. FMFM 4-4 Engineer Operations
  36. FMFRP 0-55 Desert Water Supply
  37. FMFRP 12-51 Engineer Operations
  38. GTA 5-7-13 Bridge Classification Booklet
  39. GTA 5-7-6 Bridge Design Card
  40. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
  41. JP 3-34 Engineer Doctrine for Joint Operations
  42. MCRP 3-17.2 Multiservice Procedures for Explosive Ordnance Disposal (NTTP) in a Joint Environment
  43. MCRP 3-17A Engineer Field Data
  44. MCRP 3-17B Engineer Forms and Reports
  45. MCRP 4-11.1D Field Hygiene and Sanitation
  46. MCRP 4-11B Environmental Considerations in Military Operations
  47. MCWP 3-1 Ground Combat Operations
  48. MCWP 3-17 Engineer Operations
  49. MCWP 3-35.1 Cold Weather Operations
  50. MCWP 3-35.2 Mountain Operations
  51. MCWP 3-35.3 Military Operations on Urbanized Terrain
  52. MCWP 3-35.5 Jungle Operations
  53. MCWP 3-35.6 Desert Operations
  54. MCWP 3-41.1 Rear Area Operations
  55. MCWP 3.21.1 Aviation Ground Support
  56. MCWP 4-1 Logistics Operations
  57. MCWP 4-11 Combat Service Support
  58. MCWP 4-11.3 Transportation Operations
  59. MCWP 4-11.4 Maintenance Operations
  60. MCWP 4-11.6 Bulk Liquid Operations
  61. MCWP 4-24 Commander's Guide to Maintenance
  62. MCWP 4-25.5 Bulk Liquids Operations
  63. MCWP 4-6 MAGTF Supply Operations
  64. MCWP 5-1 Marine Corps Planning Process
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**ENGR-XENG-3703:** Conduct vertical construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** To conduct vertical construction is to build or provide improvements to existing structures or construction of base camps, command posts, and maintenance facilities for use by the MAGTF.

**CONDITION:** Given a mission, commanders intent, tactical situation, a map, task organized equipment and personnel, design specifications, construction materials, and appropriate references

**STANDARD:** To build/improve facilities to meet or exceed the requirements listed in the design specifications in accordance with the commanders' intent.

**EVENT COMPONENTS:**

1. Plan horizontal construction
2. Conduct engineer reconnaissance

3. Coordinate horizontal construction
4. Construct a hasty/deliberate road or trail
5. Conduct site preparation
6. Construct an expeditionary air field
7. Conduct dust abatement
8. Conduct beachhead improvement

**REFERENCES:**

1. FM 21-10 Field Hygiene and Sanitation
2. FM 21-75 Combat Skills of the Soldier
3. FM 3-06 Urban Operations
4. FM 3-07 Stability Operations and Support Operations
5. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
6. FM 5-100 Engineers in Combat Operations
7. FM 5-103 Field Fortifications
8. FM 5-163 Sewerage
9. FM 5-250 Explosives and Demolitions
10. FM 5-335 Drainage
11. FM 5-34 Engineering Field Data
12. FM 5-412 Project Management
13. FM 5-426 Carpentry
14. FM 5-428 Concrete Masonry
15. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
16. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
17. FM 5-434 Earthmoving Operations
18. FM 5-446 Military Non-Standard Fixed Bridges
19. FM 5-553 General Drafting
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 4-4 Engineer Operations
22. FMFRP 12-51 Engineer Operations
23. GTA 5-7-13 Bridge Classification Booklet
24. GTA 5-7-6 Bridge Design Card
25. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
26. JP 3-34 Engineer Doctrine for Joint Operations
27. MCWP 3-17 Engineer Operations
28. MCWP 3-35.1 Cold Weather Operations
29. MCWP 3-35.2 Mountain Operations
30. MCWP 3-35.3 Military Operations on Urbanized Terrain
31. MCWP 3-35.5 Jungle Operations
32. MCWP 3-35.6 Desert Operations
33. MCWP 3-41.1 Rear Area Operations
34. MCWP 4-11 Combat Service Support
35. TM 5-232 Elements of Construction Surveying
36. TM 5-760 Interior Wiring

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**ENGR-XENG-3704:** Conduct demolition and obstacle removal

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** To conduct demolition and to provide for clearance of obstacles from an operational area for the construction of facilities in the support of the MAGTF.

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide clear area for the construction of facilities in accordance with the commanders' intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 3-06 Urban Operations
  3. FM 3-07 Stability Operations and Support Operations
  4. FM 34-130 Intelligence Preparation of the Battlefield
  5. FM 5-100 Engineers in Combat Operations
  6. FM 5-101 Mobility
  7. FM 5-101-5-1 Operational Terrain and Symbols
  8. FM 5-170 Engineer Reconnaissance
  9. FM 5-250 Explosives and Demolitions
  10. FM 5-34 Engineer Field Data - Field Expedient Charges
  11. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  12. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  13. FM 90-13-1 Combined Arms Breaching Operations
  14. FM 90-3 Desert Operations
  15. FM 90-5 Jungle Operations
  16. JP 3-34 Engineer Doctrine for Joint Operations
  17. MCWP 3-35.2 Mountain Operations
  18. MCWP 3-35.3 Military Operations on Urbanized Terrain
  19. MCWP 3-35.5 Jungle Operations
  20. MCWP 3-35.6 Desert Operations
  21. MCWP 3-41.1 Rear Area Operations
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**UTIL-XENG-3705:** Produce Potable Water

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel.

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 20-3 Camouflage
4. FM 5-335 Drainage
5. MCO 3500.27B Operational Risk Management

6. MCO 4450.12 Storage and Handling of Hazardous Materials
  7. MCO 5100.29 Marine Corps Safety Program
  8. MCO P5090.2A Environmental Compliance and Protection Manual
  9. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  10. MCRP 3-02G First Aid
  11. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
  12. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  13. TC 11-6 Grounding Techniques
  14. TM 01034D-12/P1 3000 Gallon Tank
  15. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  16. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
  17. TM 09777A-14/1 Water Purification Systems
  18. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
  19. TM 10802A-14/1 Tactical Water Purification System
  20. TM 5-4320-309-14 125 GPM Pump
  21. TM 9406-15 Grounding Procedures
  22. Federal, State, and Local Environmental Regulations
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**UTIL-XENG-3706:** Store Potable Water

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel.

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. 49 CFR 172.704(a) (3) Hazardous Material Regulations
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0077 Water Purification, Supply, and Related Equipment.
4. FM 10-52 Water Supply in Theaters of Operation
5. FM 10-52-1 Water Supply Point Equipment and Operations
6. FM 20-3 Camouflage
7. FMFRP 0-55 Desert Water Supply
8. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
9. MCO 3500.27B Operational Risk Management
10. MCO 4450.12 Storage and Handling of Hazardous Materials
11. MCO 4450.14 Joint Service Manual for Storage and Materials Handling
12. MCO 5100.29 Marine Corps Safety Program
13. MCO 5104.3 Marine Corps Radiation Safety Program
14. MCRP 3-02G First Aid
15. SL-3 86702D w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
16. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
17. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
18. TM 01034D-12/P1 3000 Gallon Tank
19. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
20. TM 08936A-13&P Forward Area Water Point Supply System
21. TM 08990A-15&P/1 Sixcon Water Tank Module
22. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1

23. TM 10-4320-226-14 350 GPM Pump
24. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
25. TM 10-4320-343-14 350 GPM Pump
26. TM 10-4320-344-10 600 GPM Pump
27. TM 10-4320-344-24 600 GPM Pump
28. TM 10-6630-222-12&P Water Quality Analysis Set-Purification
29. TM 10596A-13&P Marine Corps Hose Reel System
30. TM 5-4320-266-14 350 GPM Pump
31. TM 5-4320-303-10 600 GPM Pump
32. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
33. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
34. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM

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**UTIL-XENG-3707:** Maintain Tactical Water Purification Systems

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. EMC Electric Motor Controls by American Technical Publishers, Inc.
5. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
6. FM 100-10 Combat Service Support
7. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
8. Local SOP Local Standard Operating Procedures
9. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
10. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
11. MCO 3500.27B Operational Risk Management
12. MCO 4610.35 USMC Equipment Characteristics File
13. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
14. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program

15. MCO 5100.29 Marine Corps Safety Program
  16. MCO 5210.11E Records Management Program for the Marine Corps
  17. MCO 5215.1 Marine Corps Directives Management Program
  18. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  19. MCO P5215.17 USMC Technical Publications System
  20. MCRP 3-02G First Aid
  21. MCWP 4-11 Combat Service Support
  22. MCWP 4-11.4 Maintenance Operations
  23. NAVMC 2761 Catalog of Publications
  24. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
  25. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
  26. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
  27. SL-3 86702F w/Ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
  28. SL-3 8D486B Pump Assembly 350 GPM
  29. SL-3-04484 w/Ch 1 Repair Kit, Collapsible Fabric Drum ( AAFS )
  30. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
  31. SL-3-09467A Pump Assembly, Centrifugal
  32. SL-4-04486B Repair Parts list, Drum, Fabric, Collapsible ( AAFS )
  33. SL-4-08922C Pump Unit 125 GPM
  34. TB 43-0134 Battery Disposition and Disposal
  35. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  36. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
  37. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
  38. TM 01034D-12/P1 3000 Gallon Tank
  39. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  40. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  41. TM 09777A-14/1 Water Purification Systems
  42. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
  43. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
  44. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
  45. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  46. TM 10802A-14/1 Tactical Water Purification System
  47. TM 11275-15/3C Characteristics of Engineering Equipment
  48. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  49. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  50. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  51. TM 5-4320-309-14 125 GPM Pump
  52. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual ( 125 GPM )
  53. TM-08922A-24P/2 Pump unit, Centrifugal, Self-priming, 125 GPM
  54. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  55. UM-PLMS Publications Library Management System
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**UTIL-XENG-3708:** Maintain Hygiene Equipment

**SUPPORTED MET(S):** 4, 6

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
5. FM 100-10 Combat Service Support
6. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
7. Local SOP Local Standard Operating Procedures
8. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
9. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
10. MCO 3500.27B Operational Risk Management
11. MCO 4610.35 USMC Equipment Characteristics File
12. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
13. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
14. MCO 5100.29 Marine Corps Safety Program
15. MCO 5210.11E Records Management Program for the Marine Corps
16. MCO 5215.1 Marine Corps Directives Management Program
17. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
18. MCO P5215.17 USMC Technical Publications System
19. MCRP 3-02G First Aid
20. MCWP 4-11 Combat Service Support
21. MCWP 4-11.4 Maintenance Operations
22. NAVMC 2761 Catalog of Publications
23. SL-3 06996C w/Ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
24. TB 43-0134 Battery Disposition and Disposal
25. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
26. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
27. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73),



- w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
28. TM 01034D-12/P1 3000 Gallon Tank
  29. TM 01243E-14/1 Laundry Facility, Bare Base
  30. TM 10006A-14/P1 Shower Facility, Bare Base
  31. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
  32. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
  33. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  34. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
  35. TM 11275-15/3C Characteristics of Engineering Equipment
  36. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  37. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
  38. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  39. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual ( 125 GPM )
  40. UM MCPDS Marine Corps Publications Distribution System Users Manual
  41. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  42. UM-PLMS Publications Library Management System
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**UTIL-XENG-3709:** Maintain Environmental Control Units

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
3. CFR 82 EPA Section 608

4. CFR 82 EPA Section 609
5. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
6. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
7. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
8. EM 0180 Warranties
9. EMC Electric Motor Controls by American Technical Publishers, Inc.
10. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
11. FM 100-10 Combat Service Support
12. Local SOP Local Standard Operating Procedures
13. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
14. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
15. MCO 3500.27B Operational Risk Management
16. MCO 4610.35 USMC Equipment Characteristics File
17. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
18. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
19. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
20. MCO 5100.29 Marine Corps Safety Program
21. MCO 5210.11E Records Management Program for the Marine Corps
22. MCO 5215.1 Marine Corps Directives Management Program
23. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
24. MCO P5215.17 USMC Technical Publications System
25. MCRP 3-02G First Aid
26. MCWP 4-11 Combat Service Support
27. MCWP 4-11.4 Maintenance Operations
28. MRAC Modern Refrigeration & Air Conditioning Text Book
29. NAVMC 2761 Catalog of Publications
30. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
31. TB SIG 222 Solder and Soldering
32. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
33. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
34. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
35. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
36. TM 10673A-10/1 Enhanced Refrigeration Unit
37. TM 10673A-12-2 ERU TM Manual
38. TM 10673A-30P-3 ERU Parts Book
39. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
40. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
41. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
42. TM 11275-15/3C Characteristics of Engineering Equipment
43. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
44. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
45. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
46. TM 9-4110-256-14 Refrigeration Unit, Mechanical 10K BTU, Electrical text

- book
47. TM 9-4120-371-14 18,000 BTU Air Conditioner
  48. TM 9-4120-389-14 36,000 BTU Air Conditioner
  49. TM 9-4120-393-14 60,000 BTU Air Conditioner
  50. UM MCPDS Marine Corps Publications Distribution System Users Manual
  51. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  52. UM-PLMS Publications Library Management System
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**UTIL-XENG-3710:** Maintain Refrigeration Systems

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. 52C10C04/Suppl #1 Section 609 Refrigerant Recovery/Recycle Certification Handout
3. CFR 82 EPA Section 608
4. CFR 82 EPA Section 609
5. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
6. EM 0180 Warranties
7. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
8. FM 100-10 Combat Service Support
9. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
10. Local SOP Local Standard Operating Procedures
11. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
12. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
13. MCO 3500.27B Operational Risk Management
14. MCO 4610.35 USMC Equipment Characteristics File
15. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
16. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
17. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons

18. MCO 5100.29 Marine Corps Safety Program
19. MCO 5210.11E Records Management Program for the Marine Corps
20. MCO 5215.1 Marine Corps Directives Management Program
21. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
22. MCO P5215.17 USMC Technical Publications System
23. MCRP 3-02G First Aid
24. MCWP 4-11 Combat Service Support
25. MCWP 4-11.4 Maintenance Operations
26. MRAC Modern Refrigeration & Air Conditioning Text Book
27. NAVMC 2761 Catalog of Publications
28. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
29. TB SIG 222 Solder and Soldering
30. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
31. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
32. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
33. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
34. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
35. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
36. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
37. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
38. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
39. TM 10673A-10/1 Enhanced Refrigeration Unit
40. TM 10673A-12-2 ERU TM Manual
41. TM 10673A-30P-3 ERU Parts Book
42. TM 11275-15/3C Characteristics of Engineering Equipment
43. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
44. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
45. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
46. UM MCPDS Marine Corps Publications Distribution System Users Manual
47. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
48. UM-PLMS Publications Library Management System

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**FUEL-XENG-3711:** Coordinate Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Coordinate Bulk Petroleum Operations,

**CONDITION:** Given a mission order, location of the operation, estimated fuel requirements, personnel, and required equipment.

**STANDARD:** To support mission requirements.

**EVENT COMPONENTS:**

1. Supervise Fuel Systems Communications Plan
2. Prepare Fuel Distribution Plan
3. Conduct Petroleum Laboratory Quality Surveillance and Control Program

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-68 Aircraft Refueling
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**FUEL-XENG-3712:** Identify Fuel Testing Requirements

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Identify Fuel Testing Requirements.

**CONDITION:** Provided a mission order, required testing equipment, and current references.

**STANDARD:** To meet established specifications tested by American Society for Testing Materials (ASTM) methods.

**REFERENCES:**

1. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  2. FM 10-67-2 Petroleum Laboratory Testing and Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  4. ULSS-00 3089-15 TPLM
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**FUEL-XENG-3713:** Direct Bulk Petroleum Site Construction

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Direct Bulk Petroleum Site Construction.

**CONDITION:** Provided a fuel distribution plan with a system layout, necessary equipment, engineer equipment operators, and references.

**STANDARD:** To ensure proper set-up for bulk petroleum operations.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-3714:** Employ Bulk Petroleum Distribution Systems

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Employ bulk petroleum distribution systems,

**CONDITION:** Provided a mission order, a fuel distribution system plan, equipment, materials, proper personnel, and current references.

**STANDARD:** To support the fuel requirements specified in the order.

**EVENT COMPONENTS:**

1. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-3715:** Receive Petroleum Product

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Receive Petroleum Product.

**CONDITION:** Provided the required operations order, bulk petroleum equipment, trained personnel, and references.

**STANDARD:** to support mission requirements.

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**FUEL-XENG-3716:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Monitor Petroleum Oil and Lubricants (POL) Consumption and Storage.

**CONDITION:** Provided containers of POL, storage area for POL, usage records, and references.

**STANDARD:** To ensure correct and efficient consumption, and safe storage of POL until the required amounts are on hand to support the mission per the current references.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-3717:** Provide Tactical Bulk Petroleum Storage

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Provide Tactical Bulk Fuel Storage.

**CONDITION:** Given an operations order and estimated fuel requirements.

**STANDARD:** To sustain bulk petroleum operations.

**EVENT COMPONENTS:**

1. Provide Fuel Consumption Estimates to Higher Headquarters
2. Collate Fuel Requirements
3. Prepare Preliminary Environmental Assessments
4. Analyze Bulk Fuel Factors Affecting Operations and Exercise

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-69 Petroleum Supply Point Equipment and Operations
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-3718:** Establish a Petroleum Dispensing Point

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Establish a Petroleum Dispensing Point.

**CONDITION:** Provided a tactical fuel system, operations order, required personnel, and references.

**STANDARD:** to ensure using units receive the necessary fuel for the mission.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. MCWP 4-11 Combat Service Support
  3. MCWP 4-25.5 Bulk Liquids Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**FUEL-XENG-3719:** Conduct Tactical Bulk Petroleum Operations

**SUPPORTED MET(S):** 4

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct Bulk Petroleum Operations.

**CONDITION:** Given a mission order, location of operation, estimated fuel requirements, required personnel and equipment, a communications plan, necessary support equipment, and current references.

**STANDARD:** To provide uninterrupted fuel support per mission requirements.

**EVENT COMPONENTS:**

1. Develop Bulk Fuel Site Rear Area Security Plan
2. Manage Procedures Required to Change Product Types
3. Manage Employment of Fuel Distribution Systems

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. FM 10-68 Aircraft Refueling
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-25.5 Bulk Liquids Operations
  5. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**ENGR-MOBL-3801:** Engage targets with MK153 SMAW

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Given a tactical scenario which presents a series of realistic threats, at ranges 150 to 250 meters, wearing a fighting load, operating as an assault team (gunner and assistant gunner) in support of a maneuvering unit, firing from all positions, during day or night operations.

**STANDARD:** Attain hits on designated/appropriate targets from suitable tactical positions using spotting rounds and appropriate rockets, maximizing



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the use of cover to load and engage targets, or suppressing fire/ concealment, when cover is not available. Targets will be engaged in accordance with commander's intent and the target attack guidance matrix. Backblast safety area will not be violated by friendly personnel or equipment.

**REFERENCES:**

1. TM 08673A-10/1 Launcher, Assault Rocket 83MM (SMAW) MK 153 MOD 0

**SUPPORT REQUIREMENTS:****ORDNANCE:**

<u>DODIC</u>	<u>Quantity</u>
HX07 Rocket, 83mm HEAA Practice MK7 Mod 0	

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** This task should be trained on the ISMT before expending live rounds. This task can be accomplished using training rounds. This task can be sustained through ISMT.

**ENGR-MOBL-3802:** Conduct obstacle breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given a mission, commander's intent, a map, designated area, tasked organized personnel and equipment, and references.

**STANDARD:** To insure the proper reduction of enemy obstacles to support the commander's intent and concept of operations.

**EVENT COMPONENTS:**

1. Conduct assault breaching operations
2. Conduct expedient gap crossing operations
3. Conduct route sweep operations
4. Conduct urban breaching
5. Conduct engineer reconnaissance
6. Conduct instride breaching operations
7. Conduct covert breaching operations
8. Plan breaching operations
9. Conduct deliberate breaching operations
10. Coordinate breaching operations

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 90-13-1 Combined Arms Breaching Operations

9. FMFM 13 MAGTF Engineer Operations
10. FMFM 13-7 MAGTF Breaching Operations
11. FMFM 4-4 Engineer Operations
12. MCRP 3-17A Engineer Field Data
13. MCRP 3-17B Engineer Forms and Reports
14. MCWP 3-17 Engineer Operations
15. MCWP 3-17.1 River-Crossing Operations
16. MCWP 3-17.3 Breaching Operations
17. MCWP 3-17.3 MAGTF Breaching Operations

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**ENGR-MOBL-3803:** Conduct area clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided a mission, a designated area with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure the proper reduction of obstacle(s) [explosive or non-explosive] in an area to provide a secure environment for operations in accordance with the commanders intent and mobility plan.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 34-130 Intelligence Preparation of the Battlefield
5. FM 5-100 Engineers in Combat Operations
6. FM 5-101 Mobility
7. FM 5-101-5-1 Operational Terrain and Symbols
8. FM 5-170 Engineer Reconnaissance
9. FM 5-250 Explosives and Demolitions
10. FM 5-34 Engineer Field Data - Field Expedient Charges
11. FM 90-13-1 Combined Arms Breaching Operations
12. FM 90-3 Desert Operations
13. FM 90-5 Jungle Operations

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**ENGR-MOBL-3804:** Conduct obstacle breaching operations with Assault Breacher Vehicle (ABV)

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Includes explosive and non-explosive reduction of obstacles

**CONDITION:** Given a mission, commander's intent, an obstacle, an assault breacher vehicle with crew, ordnance and equipment, and references.

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**STANDARD:** Reduce, proof, and mark obstacles to support the commander's intent and concept of operations.

**EVENT COMPONENTS:**

1. Conduct assault breaching operations
2. Conduct expedient gap crossing operations
3. Conduct route sweep operations
4. Conduct urban breaching
5. Conduct engineer reconnaissance
6. Conduct instride breaching operations
7. Conduct covert breaching operations
8. Plan breaching operations
9. Conduct deliberate breaching operations
10. Coordinate breaching operations

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 90-13-1 Combined Arms Breaching Operations
9. FMFM 13 MAGTF Engineer Operations
10. FMFM 13-7 MAGTF Breaching Operations
11. FMFM 4-4 Engineer Operations
12. MCRP 3-17A Engineer Field Data
13. MCRP 3-17B Engineer Forms and Reports
14. MCWP 3-17 Engineer Operations
15. MCWP 3-17.1 River-Crossing Operations
16. MCWP 3-17.3 Breaching Operations
17. MCWP 3-17.3 MAGTF Breaching Operations

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**ENGR-MOBL-3805:** Conduct route clearance operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Obstacles may include mines, unexploded ordnance, improvised explosive devices, non-explosive obstacles, and damage to the route that severely limits mobility. The route will only be "cleared" while it remains under the control of friendly forces.

**CONDITION:** Provided a mission, a designated route with known/potential/suspected obstacle(s), personnel, engineer tools and equipment, intelligence support, demolition tools, explosives, and references.

**STANDARD:** To ensure friendly force mobility on the cleared route [friendly forces are not fixed, turned, blocked, nor disrupted] in accordance with the commanders intent, while the route remains in friendly forces control.

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-170 Engineer Reconnaissance
  3. FM 5-250 Explosives and Demolitions
  4. FM 5-34 Engineer Field Data - Field Expedient Charges
  5. FM 5-36 Route Reconnaissance and Classification
  6. FM 90-13-1 Combined Arms Breaching Operations
  7. FM 90-3 Desert Operations
  8. FM 90-5 Jungle Operations
  9. GTA 5-2-5 Engineer Reconnaissance
  10. GTA 5-7-13 Bridge Classification Booklet
  11. MCRP 3-17A Engineer Field Data
  12. MCRP 3-17B Engineer Forms and Reports
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**ENGR-MOBL-3806:** Conduct urban breaching operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Means of breaching may include but is not limited to mechanical, explosive, or ballistic.

**CONDITION:** Given a mission, commanders intent, task organized personnel, a target, engineer tools and equipment, demolition tools and equipment, explosives and/or shotgun with ammunition, and references.

**STANDARD:** To penetrate the target 100% to allow follow on forces to make an assault through the created breach, while limiting collateral damage.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
  2. FM 3-06 Urban Operations
  3. FM 5-101 Mobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 5-250 Explosives and Demolitions
  6. FM 5-34 Engineer Field Data - Field Expedient Charges
  7. SWO 60-AA-MMA-010 Demolition Materials
  8. TM 9-1300-206 Explosive Standards
  9. TM 9-1300-214 Military Explosives
  10. Guidebook for Assault Entry Techniques
  11. Urban Mobility Engineer Guidebook
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**ENGR-MOBL-3807:** Conduct gap crossing operations with Joint Assault Bridge (JAB)

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Gap crossing includes both wet and dry gaps. It includes tactical assault bridging (armored vehicle launched bridge or its replacement, the joint assault bridge).

**CONDITION:** Given a mission, commander's intent, a map, task organization of equipment and personnel, and the appropriate references.

**STANDARD:** To provide an avenue of approach, lane, or means across a gap that will meet or exceed military load classification required to support the concept of operations in accordance with the commanders' intent.

**EVENT COMPONENTS:**

1. Plan bridging operations
2. Coordinate bridging operations
3. Prepare the bridge sites
4. Assemble the bridge
5. Conduct engineer reconnaissance
6. Disassemble the bridge

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-101 Mobility
3. FM 5-170 Engineer Reconnaissance
4. FM 5-250 Explosives and Demolitions
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. FM 5-36 Route Reconnaissance and Classification
8. FM 5-434 Earthmoving Operations
9. FM 5-446 Military Non-Standard Fixed Bridges
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineers
14. GTA 5-7-13 Bridge Classification Booklet
15. GTA 5-7-6 Bridge Design Card
16. MCRP 3-17A Engineer Field Data
17. MCRP 3-17B Engineer Forms and Reports
18. MCWP 3-17 Engineer Operations
19. MCWP 3-17.1 River-Crossing Operations
20. MCWP 3-17.3 Breaching Operations
21. MCWP 3-17.3 MAGTF Breaching Operations
22. TM 5-5420-212-12 Medium Girder Bridge
23. TM 5-5420-212-12-1 Link Reinforcement Set

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**ENGR-CMOB-3901:** Create obstacles and barriers

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 2 months

**DESCRIPTION:** Obstacles and barriers can be explosive or non-explosive in nature.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement, supporting arms, an equipment density list and available personnel.

**STANDARD:** To create obstacles/barriers to turn, block, fix, or disrupt the enemy that supports commanders' intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 3-06 Urban Operations
3. FM 5-100 Engineers in Combat Operations
4. FM 5-102 Countermobility
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 90-1 Countermobility
10. FM 90-3 Desert Operations
11. FM 90-5 Jungle Operations
12. FM 90-7 Combined Arms Obstacle Integration
13. FMFM 13 MAGTF Engineer Operations
14. FMFM 13 MAGTF Engineer Operations
15. FMFM 4-4 Engineer Operations
16. MCRP 3-17A Engineer Field Data
17. MCWP 3-17 Engineer Operations
18. TM 11275-15/3C Characteristics of Engineering Equipment
19. UNIT SOP Unit's Standing Operating Procedures
20. Appropriate Technical Manuals

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**ENGR-CMOB-3902:** Conduct countermobility operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Conduct countermobility planning.
2. Integrate countermobility plan with the concept of operations.
3. Participate in supported unit planning.
4. Complete the engineering portions of the orders
5. Identify what organic and nonorganic units are completing each task
6. Develop engineer estimate of supportability.
7. Issue warning orders to subordinate units

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. FM 5-170 Engineer Reconnaissance
  4. FM 5-250 Explosives and Demolitions
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 90-1 Countermobility
  7. FM 90-7 Combined Arms Obstacle Integration
  8. MCRP 3-17B Engineer Forms and Reports
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**ENGR-MOBL-3903:** Conduct mobility operations

**SUPPORTED MET(S):** 2

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes rules of engagement and supporting arms from the high water mark inland

**STANDARD:** To achieve force projection and conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Maintain organic reserve forces.
2. Issue the order.
3. Orchestrate the execution of mobility operations.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment

- 22. TM 9-1300-214 Military Explosives
- 23. UNIT SOP Unit's Standing Operating Procedures

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**ENGR-RECN-3904:** Conduct area reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct reconnaissance in a directed effort to obtain detailed information concerning the terrain or enemy activity within a prescribed area, such as a town, ridgeline, woods, or other feature critical to operations( i.e. a bridge or installation).

**CONDITION:** Given a mission, commander's intent, task organization of personnel and equipment, an area, and references.

**STANDARD:** To conduct an area reconnaissance of the specified area/feature and gather all relevant engineer data and produce the engineer forms/reports or designated products IAW unit SOPs or guidance to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

- 1. Execute the order
- 2. Maintain a reserve element

**REFERENCES:**

- 1. 5-446 Military Non-Standard Fixed Bridge
- 2. FM 5-101 Mobility
- 3. FM 5-102 Countermobility
- 4. FM 5-170 Engineer Reconnaissance
- 5. FM 5-34 Engineer Field Data - Field Expedient Charges
- 6. FM 5-36 Route Reconnaissance and Classification
- 7. GTA 5-2-5 Engineer Reconnaissance
- 8. GTA 5-7-13 Bridge Classification Booklet
- 9. JP 3-34 Engineer Doctrine for Joint Operations
- 10. MCRP 3-17A Engineer Field Data
- 11. MCRP 3-17B Engineer Forms and Reports
- 12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
- 13. MCWP 3-17 Engineer Operations
- 14. MCWP 3-17.4 Engineer Reconnaissance

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**ENGR-RECN-3905:** Conduct route reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Confirm historical line-of-communications data through on-site reconnaissance to determine critical routes and roads, key terrain impacting on planned/contingency operations. Route reconnaissance includes bridges



roads, fords, ferries, tunnels, airfields, and other transportation related features.

**CONDITION:** Given a mission, commanders' intent, a map, task organization of personnel and equipment, route/road to reconnoiter, and references

**STANDARD:** To conduct a reconnaissance of the specified route/road and gather all relevant engineer data and produce form/reports or designated products IAW unit SOPs or guidance, to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
2. FM 5-101 Mobility
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-34 Engineer Field Data - Field Expedient Charges
6. FM 5-36 Route Reconnaissance and Classification
7. GTA 5-2-5 Engineer Reconnaissance
8. GTA 5-7-13 Bridge Classification Booklet
9. JP 3-34 Engineer Doctrine for Joint Operations
10. MCRP 3-17A Engineer Field Data
11. MCRP 3-17B Engineer Forms and Reports
12. MCWP 3-17 Engineer Operations

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**ENGR-REC-3906:** Conduct zone reconnaissance

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** To conduct a directed effort to obtain detailed information concerning all routes, obstacles (to include chemical or radiological contamination), terrain, enemy forces within a zone defined by boundaries. A zone reconnaissance normally is assigned when the enemy situation is vague or when information concerning cross-country trafficability is desired.

**CONDITION:** Given a mission, commander's intent, map, designated zone, task organization of personnel and equipment, and references.

**STANDARD:** To conduct a reconnaissance of the specified zone and gather all relevant engineer data and produce engineer reports/forms or designated products IAW unit SOPs or guidance to support the concept of operations and in accordance with commander's intent.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. 5-446 Military Non-Standard Fixed Bridge
  2. FM 5-101 Mobility
  3. FM 5-102 Countermobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 5-34 Engineer Field Data - Field Expedient Charges
  6. FM 5-36 Route Reconnaissance and Classification
  7. GTA 5-2-5 Engineer Reconnaissance
  8. GTA 5-7-13 Bridge Classification Booklet
  9. JP 3-34 Engineer Doctrine for Joint Operations
  10. MCRP 3-17A Engineer Field Data
  11. MCRP 3-17B Engineer Forms and Reports
  12. MCWP 2-15.3 Ground Reconnaissance Operations (FMFM 2-2)
  13. MCWP 3-17 Engineer Operations
  14. MCWP 3-17.4 Engineer Reconnaissance
  15. MCWP 3-35.5 Jungle Operations
  16. MCWP 3-35.6 Desert Operations
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**ENGR-SURV-3907:** Construct survivability positions

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Positions may include but are not limited to; bunkers, vehicle defilades, ECP/VCP's, berms/barriers, hardening of existing structures, etc.

**CONDITION:** Provided a mission, commanders intent, a map, reconnaissance reports, survivability plan, a task organization of personnel and equipment, and references

**STANDARD:** To build survivability positions that meets or exceeds the mission requirements and supports the concept of operations in accordance with the commanders' intent.

**RELATED EVENTS:**

1371-SURV-1097

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 3-06 Urban Operations
3. FM 3-07 Stability Operations and Support Operations
4. FM 5-100 Engineers in Combat Operations
5. FM 5-102 Countermobility
6. FM 5-103 Survivability
7. FM 5-170 Engineer Reconnaissance
8. FM 5-250 Explosives and Demolitions
9. FM 5-34 Engineering Field Data
10. FM 5-426 Carpentry
11. FM 90-3 Desert Operations
12. FM 90-5 Jungle Operations
13. FMFM 13 MAGTF Engineer Operations
14. FMFRP 12-51 Engineer Operations

15. JP 3-34 Engineer Doctrine for Joint Operations
16. MCRP 3-17A Engineer Field Data
17. MCWP 3-17 Engineer Operations
18. MCWP 3-41.1 Rear Area Operations
19. MCWP 4-11 Combat Service Support

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** MAP, COMPASS, PROTRACTOR, OVERLAY SHEETS, RECONNAISSANCE REPORTS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**ENGR-SURV-3908:** Conduct survivability operations

**SUPPORTED MET(S):** 3

**EVALUATION-CODED:** YES

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Conduct Survivability Operations; includes but is not limited to prepare plans, orders, and to direct, lead and coordinate forces to complete the required survivability operation.

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes, rules of engagement and supporting arms, task organization of personnel and equipment, and references.

**STANDARD:** To ensure survivability of the supported unit(s) and be prepared to conduct follow-on operations in accordance with the commander's intent per the order.

**EVENT COMPONENTS:**

1. Execute the order
2. Maintain a reserve element

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-103 Field Fortifications
4. FM 5-103 Survivability
5. FM 5-170 Engineer Reconnaissance
6. FM 5-250 Explosives and Demolitions
7. FM 5-335 Drainage
8. FM 5-34 Engineer Field Data - Field Expedient Charges
9. FM 5-412 Project Management
10. FM 5-426 Carpentry
11. FM 5-428 Concrete Masonry
12. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations

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13. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
14. FM 5-434 Earthmoving Operations
15. FM 5-446 Military Non-Standard Fixed Bridges
16. FM 5-553 General Drafting
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FM 90-7 Combined Arms Obstacle Integration
20. FMFM 13 MAGTF Engineer Operations
21. FMFM 3-1 Command and Staff Action
22. FMFM 4-4 Engineer Operations
23. JP 3-15 Joint Doctrine for Barriers, Obstacles, and Mine Warfare
24. JP 3-34 Engineer Doctrine for Joint Operations
25. MCRP 3-17A Engineer Field Data
26. MCRP 3-17B Engineer Forms and Reports
27. MCWP 4-11 Combat Service Support

**UTIL-XENG-3909:** Establish Tactical Power Distribution System

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**CONDITION:** Given a Utilities Plan, required equipment and personnel,

**STANDARD:** To ensure operational requirements are met.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. EM 0086 Generator Sets and Power Units (CD-ROM)
4. FM 20-3 Camouflage
5. FM 20-31 Electric Power Generation in the Field
6. FM 5-422 Engineer Prime Power Operations
7. FM 5-424 Theater of Operations Electrical Systems
8. MCO 3500.27B Operational Risk Management
9. MCRP 3-02G First Aid
10. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
11. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
12. TC 11-6 Grounding Techniques
13. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
14. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
15. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
16. TM 09406-15 Grounding Procedures for Electromagnetic Interference
17. TM 11275-15/3C Characteristics of Engineering Equipment
18. TM 2000-15/4 Power System Reference Manual
19. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures

20. TM 5-760 Interior Wiring
21. TM 5-765 Electric Power Transmission and Distribution
22. TM 9406-15 Grounding Procedures
23. UM 4790-5 Users Manual MIMMS
24. UM-PLMS Publications Library Management System
25. National Electrical Code
26. Wiring Diagrams

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**UTIL-XENG-3910:** Maintain Tactical Power Distribution System

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EM 0180 Warranties
4. FM 100-10 Combat Service Support
5. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
6. Local SOP Local Standard Operating Procedures
7. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
8. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
9. MCO 3500.27B Operational Risk Management
10. MCO 4610.35 USMC Equipment Characteristics File
11. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
12. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
13. MCO 5100.29 Marine Corps Safety Program
14. MCO 5210.11E Records Management Program for the Marine Corps
15. MCO 5215.1 Marine Corps Directives Management Program
16. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
17. MCO P5215.17 USMC Technical Publications System
18. MCRP 3-02G First Aid
19. MCWP 4-11 Combat Service Support

20. MCWP 4-11.4 Maintenance Operations
21. NAVMC 2761 Catalog of Publications
22. TB SIG 222 Solder and Soldering
23. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
24. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
25. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
26. TM 11275-15/3C Characteristics of Engineering Equipment
27. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
28. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
29. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
30. UM MCPDS Marine Corps Publications Distribution System Users Manual
31. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
32. UM-PLMS Publications Library Management System

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**UTIL-XENG-3911:** Maintain utilities electrical equipment

**SUPPORTED MET(S):** 4, 8

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**CONDITION:** Provided equipment, tools, repair parts, supplies, and references.

**STANDARD:** To sustain equipment in an operational status in accordance with current references.

**EVENT COMPONENTS:**

1. Conduct predeployment activities.
2. Prepare Campaign or major operations and related plans and orders.
3. Conduct mission analysis.
4. Develop and refine Courses of Action (COA).
5. Select or modify a Course of Action.
6. Conduct operational risk assessment.
7. Conduct Engineer Reconnaissance.
8. Develop equipment density list (EDL).
9. Develop Table of Organization (T/O).

**REFERENCES:**

1. 3080-50 Corrosion Control Procedures
2. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
3. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
4. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
5. EM 0180 Warranties
6. EMC Electric Motor Controls by American Technical Publishers, Inc.
7. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing

8. FM 100-10 Combat Service Support
9. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
10. Local SOP Local Standard Operating Procedures
11. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
12. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
13. MCO 3500.27B Operational Risk Management
14. MCO 4610.35 USMC Equipment Characteristics File
15. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
16. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
17. MCO 5100.29 Marine Corps Safety Program
18. MCO 5210.11E Records Management Program for the Marine Corps
19. MCO 5215.1 Marine Corps Directives Management Program
20. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
21. MCO P5215.17 USMC Technical Publications System
22. MCRP 3-02G First Aid
23. MCWP 4-11 Combat Service Support
24. MCWP 4-11.4 Maintenance Operations
25. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
26. NAVMC 2761 Catalog of Publications
27. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
28. SI 10578A-12/1 Warranty Procedures for the Generator, 15kw (Apr 99)
29. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
30. SL-3 00456A w/Ch 1-5 Tool Kit Mechanic's General
31. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
32. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
33. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
34. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
35. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
36. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
37. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
38. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
39. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
40. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
41. TB 43-0134 Battery Disposition and Disposal
42. TB SIG 222 Solder and Soldering

43. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
44. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
45. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
46. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
47. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
48. TM 05684C/05685B-12 MEP-3 Generator Set
49. TM 06858B/06859D-12 MEP-5 Generator Set
50. TM 08712A-14/1 Mobile Electric Power Distribution System (MEPDIS)
51. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
52. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
53. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
54. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
55. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
56. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
57. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
58. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
59. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
60. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
61. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
62. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
63. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
64. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
65. TM 10488-CD Generator, Trailer Mounted (Oct 00)
66. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance



Repair Parts and Special Tools List Manual for Tactical Water Purification System

- 67. TM 11275-15/3C Characteristics of Engineering Equipment
  - 68. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  - 69. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  - 70. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  - 71. UM MCPDS Marine Corps Publications Distribution System Users Manual
  - 72. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  - 73. UM-PLMS Publications Library Management System
-

ENG & UTIL T&R MANUAL

CHAPTER 4

MOS 1120 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 4

MOS 1120 INDIVIDUAL EVENTS

**4000. PURPOSE.** This chapter includes all individual events for the Utilities Officer. An individual event is an event that a trained Utilities Officer would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailor's individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**4001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1120).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
MANT - Maintenance  
ADMN - Administration

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Utilities Officer individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**4002. INDIVIDUAL CORE CAPABILITIES 1120**

1. UTILITIES OFFICER 1120 - Career Progression Philosophy

Utilities Officers serve in the battalions and squadrons of the divisions, air wings and Marine Logistics Groups as well as the Marine Corps Engineer School and Marine Corps Systems Command. The tour length for all ranks is 24 months. The order in which a Utilities Officer moves through the Engineer Community is as follows:

- a. Possess experience in either MOS 1141, 1142, 1161, 1169, or 1171.
- b. Utilities Officers are trained at Utilities Instruction Company, Marine Corps Engineer School, Camp Lejeune, NC.

- c. WO - CW02s serve at the Engineer Support Battalions, Marine Wing Support Squadrons, Marine Wing Communication Squadrons, and Marine Air Support Squadrons.
  - d. CW03s serve at the Combat Engineer Battalions, Engineer Support Battalions, Maintenance Battalions, Communication Battalions, and Marine Air Control Squadrons.
  - e. CW04s serve at the Engineer Support Battalions, and Maintenance Battalions.
  - f. CW05s serve at Marine Corps Engineer School, and Marine Corps Systems Command.
2. Billet Description. Utilities Officers are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF UTILITIES OFFICER

Utilities Officers are technical advisers to the commander at all levels of all elements of the various MAGTFs on the timely and appropriate employment of utilities support. These Warrant Officers analyze, translate, and execute commanders' operational requirements into a utilities support reality that enhances mission accomplishment. They plan, manage, and delegate the establishment, operation, and maintenance of water filtration/purification, storage, and distribution sites; electric power generation sites along with the inherent underground, above ground, and overhead electric power distribution systems; and shower and laundry services. They coordinate and manage the installation, maintenance and repair of heating, ventilation, air conditioning (to include automotive), and refrigeration equipment; and the maintenance and repair of the electrical systems on engineer and general supply equipment. Water quality assurance, field sanitation, sewage, and waste disposal is also planned, coordinated and managed. When deployed in support of Military Operations Other Than War (MOOTW), these officers also plan direct, and coordinate the installation and repair of plumbing and indoor electrical systems. As the utilities specialists for the Marine Corps, their liaison with DoD PM-MEP (Project Manager - Mobile Electric Power) and JWRMAG (Joint Water Resources Management Action Group) provide an effective and beneficial interface, at the Joint level, by the most qualified persons to address Marine Corps utilities requirements. This MOS is technical in nature and requires years of experience to become proficient. Due to the diversity of commands throughout the Marine Corps, some of the duties and tasks performed by the Utilities Officer may overlap with those of the Engineer Equipment Officer and Motor Transport Maintenance Officer. Additional duties may include: formal schools faculty, new equipment/systems research and development, and new systems acquisition.

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Utilities Officer. The following core skills are identified for MOS 1120:

- a. Manage shop operations.
- b. Plan utilities operations.
- c. Manage utilities operations.
- d. Manage utilities personnel.

- e. Manage utilities equipment operations.
- f. Manage utilities maintenance.

4. Billet Applicability. The basic duties and core skills for the 1120 MOS are the same throughout the operating forces.

**4003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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1120-XENG-2501	Plan interior electrical wiring system	4-29
1120-XENG-2502	Plan interior heating, ventilation and air conditioning (HVAC) system	4-30
1120-XENG-2503	Plan interior plumbing system	4-30
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1120-XENG-2505	Manage interior heating, ventilation and air conditioning (HVAC) system installation	4-32
1120-XENG-2506	Manage interior plumbing system installation	4-32
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1120-XENG-2509	Manage interior plumbing system repairs	4-34
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1120-XENG-2608	Manage field water purification/storage/distribution system installation	4-35
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1120-XENG-2610	Manage field refrigeration/air conditioning equipment installation	4-36
1120-XENG-2611	Manage field electrical power generation/distribution system installation	4-37
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**4004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1120-ADMN-1101:** Manage Operational Risk (ORM)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Given the inherent dangers involved in working around equipment, electricity and water, effort must be made to ensure risks are reduced or eliminated by supervising the implementation of controls.

**BILLETS:** Platoon Commander, Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** Task/mission effectiveness is increased while loss of personnel and materiel is minimized through the implementation of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Supervise implementation of controls.
8. Periodically review task/mission, hazards and controls.

**REFERENCES:**

1. DODI 6055.1 DoD Safety and Occupational Health (SOH) Program (Aug 98)
2. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
3. MCRP 5-12.1C Risk Management (Feb 01)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Risk Management Worksheet

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**1120-ADMN-1102:** Administer a Lockout/Tagout Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Equipment Lockout/Tagout ensures personnel are protected from injury during any servicing or maintenance done on machinery or equipment, where the unexpected energizing, start-up, or release of any type of energy (e.g., steam, electricity, hydraulic, pneumatic, and gravity) could occur.

**BILLETS:** Maintenance Officer, Platoon Commander, Utilities Officer



**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** In a shop setting, with personnel, equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** Prior to personnel performing maintenance, service, repair, or modification to equipment, the equipment shall be locked out or tagged out to protect against accidental or inadvertent start-up, or operation that may cause injury to personnel.

**PERFORMANCE STEPS:**

1. Review references.
2. Evaluate Lockout/Tagout Program using NAVMC 11402 (annual requirement).
3. Ensure availability of an ample supply of locks and tags.
4. Review/approve Lockout/Tagout Checklists, NAVMC 11403.
5. Maintain Lockout/Tagout Log, NAVMC 11404.
6. Control the issue of Lockout/Tagout devices to authorized workers.
7. Ensure the timely return of Lockout/Tagout devices.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11402 - Lockout/Tagout Program Evaluation; NAVMC 11403 - Lockout/Tagout Checklist; NAVMC 11404 - Lockout/Tagout Log.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed instructions for this event.

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**1120-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Working around equipment that generates electricity dramatically increases the possibility of electrocution. The ability to safely recover an electric shock victim will save lives.

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with victim until medical help arrives.
8. Report the incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 09406-15 Grounding Procedures for Electromagnetic Interference
- 

**1120-ADMN-1104:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.

**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authority.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. Local SOP Local Standard Operating Procedures
  2. MCO 4450.12 Storage and Handling of Hazardous Materials
  3. MCO P4790.2C MIMMS Field Manual
  4. MCO P5090.2A Environmental Compliance and Protection Manual
  5. MCRP 4-11B Environmental Considerations in Military Operations
- 

**1120-ADMN-1105:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.

**STANDARD:** So that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify which type of first aid required/review MSDS.
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1120-ADMN-1106:** Brief electrical safety to end users

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operation order, a field electrical power generation and distribution system plan, personnel using the system, and references.

**STANDARD:** So that the location of "off limits" areas, meaning of warning signs, prohibited electrical equipment and reasons, emergency procedures, and unsafe conditions are identified per the reference.

**PERFORMANCE STEPS:**

1. Review the operation order.
2. Review system plan.
3. Review applicable section(s) of the references.
4. Determine training requirements.
5. Deliver the training to applicable personnel.
6. Evaluate training.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1120-ADMN-1107:** Manage safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With resources, and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.
6. Conduct safety awareness training.
7. Monitor safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES:**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
2. FM 100-14 Risk Management
3. FM 5-424 Theater of Operations Electrical Systems
4. MCO 3500.27B Operational Risk Management
5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
6. MCO 5100.29 Marine Corps Safety Program
7. MCO 5100.30A Marine Corps Off-Duty And Recreation Safety Program
8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
9. MCO 5104.3 Marine Corps Radiation Safety Program
10. MCO P4790.2 MIMMS Field Procedures Manual
11. MCO P5090.2A Environmental Compliance and Protection Manual
12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
15. UNIT SOP Unit's Standing Operating Procedures
16. National Electrical Code
17. National Plumbing Code

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**1120-ADMN-1108:** Monitor environmental regulations compliance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references.

**STANDARD:** To ensure environmental policies and procedures are adhere to per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Inspect the unit compliance with applicable environmental regulations and restrictions.
3. Enforce environmental regulations.
4. Manage unit hazardous waste/material disposal program.
5. Maintain hazardous materials storage areas.
6. Maintain Material Safety Data Sheets (MSDS).
7. Report any situations that require reporting.
8. Conduct environmental regulations compliance planning for unit field operations.
9. Provide input for unit SOPs and environmental impact statements.

**REFERENCES:**

1. Local SOP Local Standard Operating Procedures
  2. MCO 10330.2 Storage/Handling of Compressed Gases
  3. MCO 4450.12 Storage and Handling of Hazardous Materials
  4. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
  5. MCO P4790.2 MIMMS Field Procedures Manual
  6. MCO P5090.2A Environmental Compliance and Protection Manual
- 

**1120-ADMN-1109:** Manage Military Occupational Specialty (MOS) training program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With training resources, records, and references.

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aid/materials as required.
8. Schedule MOS sustainment training.
9. Maintain lesson plans.
10. Document MOS training.
11. Encourage use of self-directed study and assist in providing resources.
12. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System
  2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  3. MCO 1553.1 The Marine Corps Training and Education System
  4. MCO 1553.3A USMC Unit Training Management Guide
  5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
  6. MCO 3501.7A MCCRES
  7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. MCRP 3-0 A Unit Training Management Guide
  10. MCRP 3-0B How to Conduct Training
  11. UNIT SOP Unit's Standing Operating Procedures
  12. Systems Approach to Training (SAT) Manual
- 

**1120-ADMN-1110:** Manage equipment operator licensing program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With personnel, supporting documentation, and references.

**STANDARD:** Ensuring all equipment operators are licensed per the references.

**PERFORMANCE STEPS:**

1. Determine licensing requirements.
2. Establish a unit licensing program.
3. Monitor licensing program.

**REFERENCES:**

1. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
  4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  5. UNIT SOP Unit's Standing Operating Procedures
- 

**1120-ADMN-1111:** Monitor publications control

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With access to Publications Library Management System (PLMS), Marine Corps Publications Distribution System (MDPDS), Marine Corps Publications website, Unit Publications Listing (PL), and references,

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review Publications Listing.
2. Validate Publications Listing.
3. Identify requirements based on the mission and T/O&E.
4. Evaluate control procedures.
5. Evaluate NAVMC 10772 procedures.
6. Ensure deficiencies are corrected.

**REFERENCES:**

1. MCBUL 5600 Series
  2. MCO 5215.1 Marine Corps Directives Management Program
  3. MCO 5600.20\_ Marine Corps Warfighting Publications System
  4. MCO P4790.2 MIMMS Field Procedures Manual
  5. MCO P5215.17 USMC Technical Publications System
  6. MCO P5600.31G Marine Corps Publications and Printing Regulations
  7. NAVMC 2761 Catalog of Publications
  8. TM 4700-15/1H Ground Equipment Record Procedures
  9. UM MCPDS Marine Corps Publications Distribution System Users Manual
  10. UM-PLMS Publications Library Management System
  11. UNIT SOP Unit's Standing Operating Procedures
- 

**1120-ADMN-1112:** Inventory equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, assemblies, chests, sets, kits, personnel, and references.

**STANDARD:** Ensuring assets are available to support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review item inventory requirements.
2. Schedule inventories.
3. Brief inventory teams.
4. Monitor inventories.
5. Ensure that inventories are documented.
6. Ensure deficiencies are requisitioned/acquired.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual

2. MCO P4790.2 MIMMS Field Procedures Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. UNIT SOP Unit's Standing Operating Procedures

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**1120-ADMN-1113:** Manage supply support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With maintenance, supply and fiscal reports, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Coordinate supply support requirements with the unit supply section.
2. Provide input for field budget requirements.
3. Manage execution of allocated funding.
4. Determine maintenance requirements.
5. Determine supply requirements.
6. Determine fuel requirements.
7. Manage shop/section PEB and repair order layette procedures.
8. Ensure parts, supplies, and fuel are obtained.
9. Manage shop/section validation/reconciliation procedures.

**REFERENCES:**

1. MCO 4400-16G UMMIPS
2. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
3. MCO 4400.192\_ Logistics Management Information System
4. MCO 7510.5 USMC Fraud, Waste & Abuse Oversight Awareness
5. MCO P4400.150E Marine Corps Consumer Level Policy Manual
6. MCO P4400.82 MIMMS Controlled Item Management Manual
7. MCO P4790.2 MIMMS Field Procedures Manual
8. MCO P7100.8 Field Budget Guidance Manual
9. TM 4700-15/1H Ground Equipment Record Procedures
10. UM 4400-124 FMF SASSY Using Unit Procedures
11. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
12. UNIT SOP Unit's Standing Operating Procedures

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**1120-ADMN-1114:** Manage equipment records

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer



**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, records, forms, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Identify records requirements.
2. Manage records.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  4. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
  5. MCO 5210.11E Records Management Program for the Marine Corps
  6. MCO 5213.7 Marine Corps Forms Management Program
  7. MCO P3000.13 Marine Corps Status of Resources and Training System (SORTS)
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. MCO P4790\_1B MIMMS INTRO MANUAL
  10. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  11. TM 4700-15/1H Ground Equipment Record Procedures
  12. UM 4400-120 Asset Tracking for Logistics Supply System Manual
  13. UM 4400-123 FMF SASSY Management Unit Procedures
  14. UM 4400-124 FMF SASSY Using Unit Procedures
  15. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  16. UNIT SOP Unit's Standing Operating Procedures
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**1120-ADMN-1115:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
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**1120-ADMN-1116:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a defective item and references.

**STANDARD:** So that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
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**1120-ADMN-1117:** Manage equipment availability

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment records, reports, and references.

**STANDARD:** To support the mission per the references.

**PERFORMANCE STEPS:**

1. Identify shortages/excesses.

2. Review readiness.
3. Review priority designator assignments.
4. Review maintenance cycle time.
5. Develop a plan to increase equipment availability.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4400-16G UMMIPS
  4. MCO P3000.13 Marine Corps Status of Resources and Training System (SORTS)
  5. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  6. MCO P4790.2 MIMMS Field Procedures Manual
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1120-ADMN-1118:** Brief commander on utilities situation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, site survey, camp layout, and references.

**STANDARD:** Ensuring unit priorities are understood per the references.

**PERFORMANCE STEPS:**

1. Gather briefing materials.
2. Determine briefing requirements.
3. Present the information.
4. Answer questions as required.

**REFERENCES:**

1. FM 5-0 Military Briefing
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**1120-ADMN-1119:** Place new equipment in service

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Users Logistics Support Summary (ULSS) or Fielding Plan (FP), and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the equipment's Users Logistics Support Summary (ULSS) or Fielding Plan (FP).
2. Establish a training plan for the new equipment.
3. Determine licensing requirements.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. UNIT SOP Unit's Standing Operating Procedures
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**1120-MANT-1201:** Validate maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** To ensure accuracy of the maintenance effort per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly LM2 Report.
8. Monitor Weekly Material Report
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4400-16G UMMIPS
  4. MCO P4790.2 MIMMS Field Procedures Manual
  5. TM 4700-15/1H Ground Equipment Record Procedures
  6. UM 4400-124 FMF SASSY Using Unit Procedures
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1120-MANT-1202:** Monitor maintenance related programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance related programs.
2. Inspect equipment.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Direct Modification Control program.
6. Direct Calibration Control program.
7. Direct New Equipment Warranty program.
8. Direct Joint Oil Analysis Program (JOAP).
9. Direct Replacement and Evacuation (R&E) program.
10. Direct Quality Deficiency (QDR) program.
11. Direct Recoverable Items (WIR) program.
12. Direct Quality Control (QC) program.
13. Direct Corrosion Prevention and Control (CPAC) program.
14. Ensure records are updated.

**REFERENCES:**

1. MCO 4400.194 Class VII Stock Rotation Program
  2. MCO 4731.1 Oil Analysis Program for Ground Equipment
  3. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  4. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
  5. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  6. MCO P4400.82 MIMMS Controlled Item Management Manual
  7. MCO P4790.2 MIMMS Field Procedures Manual
  8. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  9. TI-4731-14/1C MC Joint Oil Analysis Program
  10. TM 4700-15/1H Ground Equipment Record Procedures
  11. UNIT SOP Unit's Standing Operating Procedures
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**1120-XENG-1601:** Conduct utilities site survey

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a map, warning order, grid coordinates, compass, personnel, blank Water Reconnaissance Reports (DA 1712R), and references.

**STANDARD:** To support the unit mission per the warning order and references.

**PERFORMANCE STEPS:**

1. Review map, warning order, and references.
2. Brief personnel.
3. Conduct survey.
4. Evaluate site for safety concerns.
5. Evaluate site for environmental concerns.
6. Ensure that site conditions are evaluated and recorded on Water Reconnaissance Reports (DA 1712R).
7. Evaluate alternate water sources.
8. Evaluate site for camouflage, concealment, and decoys.
9. Evaluate site for Rear Area Security concerns.
10. Develop Site Survey report.
11. Brief Site Survey to those concerned.
12. Provide input for the camp layout.
13. Provide input for the engineer portions of operation orders.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 100-10 Combat Service Support
4. FM 100-15 Corps (Larger Unit) Operations
5. FM 100-19 Domestic Support Operations
6. FM 100-23-1 Humanitarian Assistance Operations
7. FM 101-10-1\_ Organizational, Technical and Logistical Data
8. FM 20-3 Camouflage
9. FM 21-10 Field Hygiene and Sanitation
10. FM 21-10-1 Unit Field Sanitation
11. FM 5-163 Sewerage
12. FM 5-170 Engineer Reconnaissance
13. FM 5-412 Project Management
14. FM 5-422 Engineer Prime Power Operations
15. FM 5-424 Theater of Operations Electrical Systems
16. FM 5-553 General Drafting
17. FM 90-3 Desert Operations
18. FM 90-5 Jungle Operations
19. FMFM 3-1 Command and Staff Action
20. FMFRP 12-51 Engineer Operations
21. MCO P3000.18 Marine Corps Planner's Manual
22. MCWP 4-1 Logistics Operations
23. MCWP 4-11 Tactical Level Logistics
24. MCWP 4-11.3 Transportation Operations
25. MCWP 5-1 Marine Corps Planning Process

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**1120-XENG-1602:** Plan field water purification/storage/distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, area map, site survey, completed Water Reconnaissance Reports (DA1712R), camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, area map, site survey, Water Reconnaissance Reports, and camp layout.
2. Water Reconnaissance Reports and camp layout.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Develop layout of water purification/storage/distribution system.
6. Design a plan for the installation and operation of field water purification/storage/distribution system.
7. Determine logistical/materiel requirements.
8. Analyze plan for changes.
9. Draw plan over area map/camp layout.
10. Brief plan to those concerned.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
2. FM 10-52 Water Supply in Theaters of Operation
3. FM 10-52-1 Water Supply Point Equipment and Operations
4. FMFRP 0-55 Desert Water Supply
5. NAVMED P-5010 Navy Sanitation
6. TM 4700-15/1H Ground Equipment Record Procedures
7. TM 9406-15 Grounding Procedures
8. UNIT SOP Unit's Standing Operating Procedures

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**1120-XENG-1603:** Plan field hygiene equipment support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, site survey, and

- camp layout.
2. Determine safety requirements.
  3. Determine environmental requirements.
  4. Develop camp layout of hygiene equipment.
  5. Design a plan for the installation and operation of field hygiene equipment.
  6. Determine logistical/materiel requirements.
  7. Analyze plan for changes.
  8. Draw plan over camp layout.
  9. Brief plan to those concerned.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 9406-15 Grounding Procedures
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**1120-XENG-1604:** Plan field refrigeration/air conditioning equipment support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, a site survey, a camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Develop camp layout of refrigeration/air conditioning equipment.
5. Design a plan for the installation and operation of field refrigeration/air conditioning equipment.
6. Determine logistical/materiel requirements.
7. Analyze plan for changes.
8. Draw plan over camp layout.
9. Brief plan to those concerned.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
2. MCO 10110.34E USMC Food Service and Subsistence Program
3. NAVMED P-5010 Navy Sanitation
4. NAVSUP P-421 Navy Food Service SOP
5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps



Military Standard Air Conditioners (Environmental Control Units (ECU))  
with Supplemental Logistics Data  
6. TM 9406-15 Grounding Procedures

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**1120-XENG-1605:** Plan field electrical power generation/distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Design a plan for the installation and operation of a Field Electrical Power Generation/Distribution System.
5. Ensure loads are balanced.
6. Determine logistical/materiel requirements.
7. Analyze plan for changes.
8. Draw plan over camp layout.
9. Brief plan to those concerned.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-1606:** Plan camp sanitation system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, area map, a site survey, a camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, area map, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Identify quantity and types of grease traps, heads/latrines, garbage pits, and soakage pits.
5. Develop layout of sanitation system components.
6. Design a plan for the installation and operation of field sanitation system.
7. Establish cleaning/inspection schedule to include preventive medicine.
8. Determine logistical/materiel requirements.
9. Analyze plan for changes.
10. Draw plan over area map/camp layout.
11. Brief plan to those concerned to include preventive medicine.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
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**4005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1120-ADMN-2120:** Monitor equipment embarkation requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, unit MAGTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAGTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES) reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references.

**STANDARD:** To support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAGTF II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Brief personnel.
7. Ensure equipment is marked for transportation/embarkation to include LOGMARS labels.
8. Ensure equipment is disassembled, stowed, packed, and/or prepared for transportation/embarkation.
9. Coordinate with unit embark chief to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and/or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
  2. FM 101-10-1\_ Organizational, Technical and Logistical Data
  3. FM 55-15 Transportation Reference Data
  4. FM 55-9 Unit Air Movement Planning
  5. FMFM 3-1 Command and Staff Action
  6. FMFM 4-6 Movement of Units in Air Force Aircraft
  7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
  8. MCO 4610.35 USMC Equipment Characteristics File
  9. MCO P3000.18 Marine Corps Planner's Manual
  10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  11. MCO P4600.7\_ USMC Transportation Manual
  12. MCWP 3-31.5 Ship-to-Shore Movement
  13. MCWP 4-11.3 Transportation Operations
  14. TM 4700-15/1H Ground Equipment Record Procedures
  15. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material
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**1120-MANT-2303:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer, Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
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**1120-MANT-2304:** Manage preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment preventive maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Determine maintenance priorities.
6. Develop preventive maintenance schedule.
7. Manage equipment preventive maintenance program.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)

2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
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**1120-MANT-2305:** Manage corrective maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment corrective maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Determine maintenance priorities.
6. Manage equipment corrective maintenance procedures.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
  7. Appropriate Technical Manuals
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**1120-MANT-2306:** Manage field maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer, Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, camp layout, equipment, resources, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, camp layout, and the references.
2. Plan field maintenance.
3. Determine safety/environmental considerations.
4. Establish field maintenance facility.
5. Establish guidelines for field maintenance facility operation.
6. Manage equipment maintenance.
7. Manage records maintenance.
8. Recover field maintenance facility.

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  4. UNIT SOP Unit's Standing Operating Procedures
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**1120-XENG-2501:** Plan interior electrical wiring system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of electrical fixtures/appliances to be installed, local code requirements, and references.

**STANDARD:** Per the NEC (NFPA 70).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review list of electrical fixtures/appliances to be installed.
3. Calculate general lighting load.
4. Identify power requirements.
5. Determine code requirements.
6. Size branch circuits.
7. Size over current protection devices.
8. Plot electrical symbols on construction plans.
9. Ensure that the interior electrical wiring system plan conforms to the references and the building's requirements.
10. Determine number of personnel required to install system.
11. Establish a Bill of Materials (BOM), including safety items.
12. Establish a Course of Action (COA).

**REFERENCES:**

1. TM 9406-15 Grounding Procedures
2. National Electrical Code

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**1120-XENG-2502:** Plan interior heating, ventilation and air conditioning (HVAC) system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of heating, ventilation and air conditioning criteria for the building, local code requirements, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review HVAC criteria.
3. Calculate volume of air to be conditioned.
4. Determine insulation characteristics.
5. Identify tons of air to be conditioned per hour.
6. Determine code requirements.
7. Determine vent and ducting requirements.
8. Plot HVAC system on construction plans.
9. Ensure that the HVAC system plan conforms to the references and the building's requirements.
10. Determine number of personnel required to install system.
11. Establish a Bill of Materials (BOM), including safety items.
12. Establish a Course of Action (COA).

**REFERENCES:**

1. FM 5-553 General Drafting
2. TM 5-704 Construction Print Reading in the Field
3. TM 9406-15 Grounding Procedures
4. National Electrical Code

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**1120-XENG-2503:** Plan interior plumbing system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of plumbing fixtures to be installed, local code requirements, and references.

**STANDARD:** Per the Uniform Plumbing Code (UPC).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review list of plumbing fixtures/appliances to be installed.
3. Identify plumbing symbols.
4. Determine code requirements.
5. Identify water supply requirements.
6. Identify waste requirements.
7. Identify vent requirements.
8. Plot plumbing system/fixtures on construction plans.
9. Ensure that the interior plumbing system plan conforms to the references and the building's requirements.
10. Identify safety concerns.
11. Determine number of personnel required to install system.
12. Establish a Bill of Materials (BOM), including safety items.
13. Establish a Course of Action (COA).

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. FM 5-553 General Drafting
  4. TM 5-704 Construction Print Reading in the Field
  5. TM 9406-15 Grounding Procedures
  6. National Plumbing Code
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**1120-XENG-2504:** Manage interior electrical wiring system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, electrical plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, electrical plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed wiring system.



**REFERENCES:**

1. FM 5-553 General Drafting
2. TM 5-704 Construction Print Reading in the Field
3. TM 9406-15 Grounding Procedures
4. National Electrical Code

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**1120-XENG-2505:** Manage interior heating, ventilation and air conditioning (HVAC) system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, HVAC plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, HVAC plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed HVAC system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
2. FM 5-553 General Drafting
3. TM 5-704 Construction Print Reading in the Field
4. TM 9406-15 Grounding Procedures

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**1120-XENG-2506:** Manage interior plumbing system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, plumbing plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, plumbing plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. FM 5-553 General Drafting
  4. TM 5-704 Construction Print Reading in the Field
  5. TM 9406-15 Grounding Procedures
  6. National Plumbing Code
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**1120-XENG-2507:** Manage interior electrical wiring system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring interior electrical wiring system repairs, personnel, tools, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the interior electrical wiring system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired wiring system.

**REFERENCES:**

1. TM 9406-15 Grounding Procedures
  2. National Electrical Code
- 

**1120-XENG-2508:** Manage interior heating, ventilation and air conditioning (HVAC) system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring HVAC system repairs, personnel, tools, materials, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the HVAC system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired HVAC system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. TM 9406-15 Grounding Procedures
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**1120-XENG-2509:** Manage interior plumbing system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring interior plumbing system repairs, personnel, tools, materials, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the plumbing system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. TM 9406-15 Grounding Procedures
  4. National Plumbing Code
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**1120-XENG-2607:** Manage camp sanitation system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, area map, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage installation of sanitation system components.
6. Inspect installed sanitation system.
7. Ensure inspection of installed system by preventive medicine personnel.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
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**1120-XENG-2608:** Manage field water purification/storage/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field water purification/storage/distribution system installation.
6. Inspect installed field water purification/storage/distribution system.
7. Ensure inspection of installed system by preventive medicine personnel.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
  2. FM 10-52 Water Supply in Theaters of Operation
  3. FM 10-52-1 Water Supply Point Equipment and Operations
  4. FMFRP 0-55 Desert Water Supply
  5. NAVMED P-5010 Navy Sanitation
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-2609:** Manage field hygiene equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field hygiene equipment installation.
6. Inspect installed field hygiene equipment.
7. Ensure inspection of installed equipment by preventive medicine personnel.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 9406-15 Grounding Procedures
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**1120-XENG-2610:** Manage field refrigeration/air conditioning equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field refrigeration/air conditioning equipment installation.
6. Inspect installed field refrigeration/air conditioning equipment.
7. Ensure inspection of installed equipment by preventive medicine personnel.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
  2. MCO 10110.34E USMC Food Service and Subsistence Program
  3. NAVMED P-5010 Navy Sanitation
  4. NAVSUP P-421 Navy Food Service SOP
  5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-2611:** Manage field electrical power generation/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the electrical power generation/distribution system installation.
6. Inspect installed field electrical power generation/distribution system.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current

4. FM 5-422 Engineer Prime Power Operations
5. FM 5-424 Theater of Operations Electrical Systems
6. TM 9406-15 Grounding Procedures

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**1120-XENG-2612:** Manage camp sanitation system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, camp sanitation system, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect components of the camp sanitation system.
3. Review safety concerns.
4. Review environmental concerns.
5. Coordinate with Preventive Medicine.
6. Monitor operation of camp sanitation system.
7. Identify components needing cleaning/repair/closure.
8. Brief personnel.
9. Monitor system maintenance.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. UNIT SOP Unit's Standing Operating Procedures

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**1120-XENG-2613:** Manage field water purification/storage/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, water purification/storage/distribution system, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Reports, and camp layout.
2. Inspect the installed water purification/storage/distribution system.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor the operation of water purification/storage/distribution system.
8. Monitor operation of water purification equipment.
9. Monitor operation of forward area water point supply systems.
10. Monitor operation of SIXCON module systems.
11. Monitor operation of water pump assemblies.
12. Monitor operation of mobile water chillers.
13. Monitor use of collapsible tanks and bladders.
14. Ensure water quantity and quality meet requirements.
15. Ensure all water production reports and logs are completed and submitted.
16. Manage water purification/storage/distribution equipment operator maintenance.
17. Ensure records/reports are updated/completed.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. TM 4700-15/1H Ground Equipment Record Procedures

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**1120-XENG-2614:** Manage field hygiene equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, hygiene equipment, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed hygiene equipment.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.



7. Monitor operation of bare base laundry facilities.
8. Monitor operation of bare base shower facilities.
9. Monitor operation of water heaters.
10. Ensure drainage system is functioning properly.
11. Ensure that daily sanitation standards are met.
12. Manage hygiene equipment operator maintenance.
13. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 9406-15 Grounding Procedures
9. UNIT SOP Unit's Standing Operating Procedures

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**1120-XENG-2615:** Manage field refrigeration/air conditioning equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, refrigeration/air conditioning equipment, operators, and references.

**STANDARD:** To support the unit mission per the reference.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed refrigeration/air conditioning equipment.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of air conditioning equipment.
8. Monitor operation of ice cream plants.
9. Monitor operation of ice making machines.
10. Monitor operation of refrigeration units.
11. Manage refrigeration/air conditioning equipment operator maintenance.
12. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
2. MCO 10110.34E USMC Food Service and Subsistence Program
3. NAVMED P-5010 Navy Sanitation

4. NAVSUP P-421 Navy Food Service SOP
  5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  6. TM 4700-15/1H Ground Equipment Record Procedures
  7. TM 9406-15 Grounding Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1120-XENG-2616:** Manage field electrical power generation/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation order, camp layout, electrical power generation/distribution system, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation order and camp layout.
2. Inspect the installed electrical power generation/distribution system.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of generator sets.
8. Monitor operation of floodlight sets.
9. Monitor operation of dummy loads.
10. Monitor electrical distribution system.
11. Ensure electrical loads are balanced.
12. Manage electrical power generation/distribution system operator maintenance.
13. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 4700-15/1H Ground Equipment Record Procedures
  7. TM 9406-15 Grounding Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1120-XENG-2617:** Manage field electrical power generation/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references,

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field electrical power generation/distribution system.
5. Brief recovery crew.
6. Ensure electrical power generation/distribution system recovery.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-2618:** Manage field refrigeration/air conditioning equipment recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.

4. Inspect installed field refrigeration/air conditioning equipment.
5. Brief recovery crew.
6. Ensure field refrigeration/air conditioning equipment recovery.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
  2. MCO 10110.34E USMC Food Service and Subsistence Program
  3. NAVMED P-5010 Navy Sanitation
  4. NAVSUP P-421 Navy Food Service SOP
  5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-2619:** Manage field hygiene equipment recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field hygiene equipment.
5. Brief recovery crew.
6. Ensure field hygiene equipment recovery.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 9406-15 Grounding Procedures
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**1120-XENG-2620:** Manage field water purification/storage/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field water purification/storage/distribution system.
5. Brief recovery crew.
6. Ensure field water purification/storage/distribution system recovery.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
  2. FM 10-52 Water Supply in Theaters of Operation
  3. FM 10-52-1 Water Supply Point Equipment and Operations
  4. FMFRP 0-55 Desert Water Supply
  5. NAVMED P-5010 Navy Sanitation
  6. TM 9406-15 Grounding Procedures
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**1120-XENG-2621:** Manage camp sanitation system recovery/closure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, area map, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect sanitation system.
5. Brief recovery/closure crew.
6. Ensure sanitation system recovery/closure.
7. Ensure marking of closed sanitation system.
8. Inspect closed/marked sanitation system.
9. Ensure inspection of closed/marked system by preventive medicine personnel.

10. Ensure closed latrine sites are recorded on area map.
11. Forward marked map to those concerned.

**REFERENCES :**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
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CHAPTER 5

MOS 1141 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 5

MOS 1141 INDIVIDUAL EVENTS

**5000. PURPOSE.** This chapter includes all individual training events for the Electrician. An individual event is an event that a trained Electrician would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**5001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4 character identifier. The first four characters represent the MOS (1141).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
MANT - Maintenance  
ADMN - Administration

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Electrician individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**5002. INDIVIDUAL CORE CAPABILITIES 1141**

1. ELECTRICIAN 1141 - Career Progression Philosophy

Electricians serve in the battalions and squadrons of the divisions, air wings and Marine Logistics Groups. The tour length for all ranks is 24 months. The order in which an Electrician moves through the Engineer Community is as follows:

a. Electricians are trained at Utilities Instruction Company, Marine Corps Engineer School, Camp Lejeune, NC.

b. Electrician Private - Staff Sergeants serve at the battalions and squadrons of the divisions, air wings and Marine Logistics Groups.



c. Cpl - SSgts are afforded the opportunity to receive advanced training by attending the Advance Electrician Course at Utilities Instruction Company, Marine Corps Engineer School Camp Lejeune, NC.

d. Sgt - SSgts can serve as instructors at Marine Corps Engineer School, Camp Lejeune, NC and any independent duty.

2. Billet Description. Electricians are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ELECTRICIAN

Using knowledge of electrical theory and concepts, Electricians install, operate, maintain, and repair underground, above ground, and overhead electrical power distribution systems. Additionally, electricians operate and perform organizational level maintenance on electrical power generation equipment, load banks, and floodlight sets. When on Military Operations Other Than War (MOOTW) they install and repair interior wiring in buildings. These duties include installing hardware, including cross-arms, insulators, and lightning arresters, and assembling/erecting and climbing utility poles/towers; stringing wire conductors; measuring, cutting, bending, assembling, and installing electric conduit; installing control and distribution apparatus, such as switches, relays, and circuit breakers; testing circuits for continuity, compatibility, and safety, including ground, of components, using test instruments such as multi-meters and ohmmeters; and installing and repairing electric fixtures. Noncommissioned officers are afforded the opportunity to attend the Advanced Electrician Course that provides in-depth instruction on the requirements of the National Electric Code and the planning of electrical support to include determining demand, phase balancing, and voltage drops. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker, is available to electricians under the United Services Military Apprenticeship Program (USMAP).

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as an Electrician. The following core skills are identified for MOS 1141:

- a. Install electrical power distribution systems.
- b. Operate electrical power distribution systems.
- c. Maintain electrical power distribution systems.
- d. Repair electrical power distribution systems.
- e. Operate electrical power generation equipment.
- f. Perform organizational level maintenance on electrical power generation equipment.
- g. Install interior wiring.
- h. Repair interior wiring.

5. Billet Applicability. The basic duties and core skills for the 1141 MOS are the same throughout the operating forces.

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**5004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1141-ADMN-1101:** Conduct an Operational Risk Assessment (ORA)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Electrician, Section Head, Section SNCOIC

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** Task/mission effectiveness is increased while loss of personnel and materiel is minimized through the use of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Implement controls.

**REFERENCES:**

1. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
  2. MCRP 5-12.1C Risk Management (Feb 01)
- 

**1141-ADMN-1102:** Control (Lockout/Tagout) hazardous energy

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Electrician, Section Head, Section SNCOIC

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** Equipment shall be locked out or tagged out to protect against accidental or inadvertent start-up, or operation that may cause injury to personnel performing maintenance, service, repair, or modification to the equipment.

**PERFORMANCE STEPS:**

1. Locate all energy isolating devices and hazardous energy sources.
2. Obtain required number of Lockout/Tagout devices.

3. Notify all effected personnel and supervisors.
4. Shut down equipment/turn off circuit.
5. Dissipate or restrain any stored energy.
6. Apply Lockout/Tagout devices.
7. Verify energy is isolated/dissipated (test circuit).
8. Effect required service, maintenance, repairs or modifications to equipment/circuit.
9. Remove Lockout/Tagout devices.
10. Restore equipment/circuit to normal operation.
11. Return Lockout/Tagout devices to program coordinator.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11403 - Lockout/Tagout Checklist.

**UNITS/PERSONNEL:** Lockout/Tagout Program Coordinator

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed information for this event.

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**1141-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with the victim until medical help arrives.
8. Report the incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 9406-15 Grounding Procedures
- 

**1141-ADMN-1104:** Conduct a pole top rescue

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and with a lineman's tool kit, and rope.

**STANDARD:** So that the injured person is lowered to the ground without further injury.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide personal protection.
4. Climb to the rescue position (with rescue rope).
5. Evaluate the victim's condition.
6. Tie the rescue rope to the victim.
7. Lower the victim to the ground.
8. Start artificial resuscitation (if necessary).
9. Remain with victim until medical help arrives.
10. Report incident.

**PREREQUISITE EVENTS:**

1141-XENG-1504

**REFERENCES:**

1. MCO 3500.27B Operational Risk Management
  2. MCRP 3-02G First Aid
  3. MCRP 5-12.1C Risk Management (Feb 01)
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**1141-ADMN-1105:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.



**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authorities.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. MCO 4450.12 Storage and Handling of Hazardous Materials
  2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  3. MCO P5090.2 Environmental Compliance and Protection Manual
  4. MCRP 4-11B Environmental Considerations in Military Operations
  5. Federal, State, and Local Environmental Regulations
  6. Local Standard Operating Procedures (SOP)
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**1141-ADMN-1106:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario,

**STANDARD:** so that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify type of first aid required (review MSDS).
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1141-ADMN-1107:** Identify required publications

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a scenario, equipment, and references.

**STANDARD:** So information will be available for accurate completion of work.

**PERFORMANCE STEPS:**

1. Determine equipment National Stock Number (NSN).
2. Determine equipment Identification Number.
3. Determine authorized echelon of maintenance.
4. Obtain publications.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO P4790.2C MIMMS Field Manual
  3. MCO P5215.17 USMC Technical Publications System
  4. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  5. TM 11275-15/3C Characteristics of Engineering Equipment
  6. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  7. UNIT SOP Unit's Standing Operating Procedures
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**1141-ADMN-1108:** Conduct an SL-3 inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment and references.

**STANDARD:** To ensure accountability of all components to sets, kits, chests and major end items per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Obtain Components List (SL-3) for the item.
3. Identify each component using the SL-3.
4. Identify missing components.
5. Identify unserviceable components.
6. Document inventory results.
7. Report any inventory discrepancies and unserviceable components.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  4. UM 4400-124 FMF SASSY Using Unit Procedures
  5. Appropriate Technical Manuals
  6. Local Standard Operating Procedures (SOP)
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**1141-ADMN-1109:** Conduct a Limited Technical Inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10254), a Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560), equipment, tools, and references.

**STANDARD:** To inspect the equipment for operability and identify all discrepancies per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify components.
3. Verify component function/serviceability.
4. Report any discrepancies identified.
5. Complete the NAVMC 10560.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10254): and Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560)

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**1141-ADMN-1110:** Document equipment operation history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524), Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D), and the references.

**STANDARD:** The NAVMC 10524 and NAVMC 696D will be completed so that the descriptive data, scheduled preventive maintenance intervals, and hours of operation for the equipment are indicated per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Fill out equipment descriptive data on the NAVMC 10524.
3. Fill out equipment descriptive data on the NAVMC 696D.
4. Record hours/days equipment was operated.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524); Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D)

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**1141-ADMN-1111:** Requisition repair parts

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order Shopping List (EROSL) (NAVMC 10925), a list of required parts/components, required unit unique data, equipment technical manuals, and the references.

**STANDARD:** So that the NAVMC 10925 can be processed, ensuring valid requisitions will be created per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals and/or stock lists.
3. Complete the NAVMC 10925 header information.
4. Annotate the repair part/component information on the NAVMC 10925.
5. Submit NAVMC 10925 for input into MIMMS.
6. Follow up/reconcile requisitions, as needed/required.
7. Receipt for parts.
8. Maintain repair project layettes.

**REFERENCES:**

1. MCO P4790.2C W/Ch 1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/Ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order Shopping List (EROSL) (NAVMC 10925)

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**1141-ADMN-1112:** Document equipment service/repair history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10245), and references.

**STANDARD:** The NAVMC 10245 will be completed so that the descriptive data and service/repair actions for the equipment are indicated per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals.
3. Fill out equipment descriptive data on the NAVMC 10245.
4. Annotate the service/repair actions taken on the NAVMC 10245.
5. Submit NAVMC 10245 for input into MIMMS.
6. Reconcile NAVMC 10245 information with data on resulting MIMMS reports.
7. File NAVMC 10245.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1141-MANT-1201:** Operate a multimeter

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an electrical circuit, and references.

**STANDARD:** To measure electrical outputs of the circuit per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-operation checks.
3. Determine correct setting (AC, DC+/-, resistance or current).
4. Test the circuit (voltage, resistance, current).
5. Record measurements/readings.

6. Perform post operation checks.
7. Analyze readings.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. FM 55-509-1 Introduction to Marine Electricity
6. IM 8024B Manufacturer's Instruction Manual for Fluke Model 8024B Digital Multimeter
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 2000-15/4 Power System Reference Manual
9. Appropriate Equipment Manual

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** multimeter

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**1141-MANT-1202:** Operate an amp probe

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an electrical circuit, and references.

**STANDARD:** To measure current at specific points in the circuit.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-op checks.
3. Determine correct setting (measuring range).
4. Test the circuit.
5. Record measurements/readings.
6. Perform post operation checks.
7. Analyze readings.

**REFERENCES:**

1. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
  2. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
-

**1141-MANT-1203:** Connect motor control circuits

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment containing an electric motor, tools, generator (power source), test equipment (multi-meter), and references,

**STANDARD:** To establish positive control of the electric motor.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify the motor control.
3. Determine motor voltage requirements.
4. Wire the motor control.
5. Inspect the wiring.
6. Start the motor.

**REFERENCES:**

1. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
  2. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  3. IC Industrial Controls by Energy Concepts, Inc.
  4. TM 2000-15/4 Power System Reference Manual
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**1141-MANT-1204:** Perform operator maintenance on a floodlight set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references,

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
  2. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
  3. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  4. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
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**1141-MANT-1205:** Change a floodlight set lamp

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO), replacement lamps, tools, and references.

**STANDARD:** Ensuring no oils from skin or other sources gets on lamp; that floodlights function, and the ERO is documented showing maintenance performed.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Change the floodlight set lamp.
4. Perform operation checks.
5. Document maintenance performed.

**REFERENCES:**

1. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
  2. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
  3. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
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**1141-MANT-1206:** Perform preventive maintenance checks and services (PMCS) on a 5kW-I (indoor) Replacement Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.



**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
- 

**1141-MANT-1207:** Perform preventive maintenance checks and services (PMCS) on a 5kW-O (outdoor) Replacement Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
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**1141-MANT-1208:** Perform preventive maintenance checks and services (PMCS) on a 15kW Replacement Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
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**1141-MANT-1209:** Assist in preventive maintenance checks and services (PMCS) on a 30kW Replacement Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
- 

**1141-MANT-1211:** Assist in preventive maintenance checks and services (PMCS) on a 300kW Replacement Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
- 

**1141-MANT-1212:** Perform preventive maintenance checks and services (PMCS) on a PD-015 15kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
- 

**1141-MANT-1213:** Assist in preventive maintenance checks and services (PMCS) on a PD-030 30kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
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**1141-MANT-1214:** Assist in preventive maintenance checks and services (PMCS) on a PD-100 100kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
- 

**1141-MANT-1215:** Perform preventive maintenance checks and services (PMCS) on a MLK-0000 Field Wiring Harness Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  2. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  3. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Supersedes TM 08712A-14/1 (May98)
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**1141-MANT-1216:** Perform operator maintenance on a DE-0001 100kW Dummy Load

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
  2. TM 07500B-14 Operation and Maintenance Instructions for Dummy Load, Electrical Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
- 

**1141-MANT-1217:** Load test a generator set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a dummy load, generator set(s), and references.

**STANDARD:** So that the ability of the generator set(s) to safely take a designated electrical load is determined.

**PERFORMANCE STEPS:**

1. Review the references and the generator technical manuals.
2. Connect the dummy load to the generator(s).
3. Perform pre-op checks.
4. Start generator.
5. Apply load to generator.
6. Perform during operation checks on dummy load.
7. Record dummy load gauge readings.
8. Disconnect load from generator.
9. Shut down generator.
10. Disconnect dummy load.
11. Perform after operation checks.
12. Analyze data collected during test.

**REFERENCES:**

1. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
2. TM 07500B-14 Operation and Maintenance Instructions for Dummy Load, Electrical Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)

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**1141-MANT-1218:** Perform operator maintenance on a MEP-531A 2kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)
-

**1141-MANT-1219:** Perform operator maintenance on a MEP-831A 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references,

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
  2. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
  3. TM 10155A/2815-24/3 Unit, Direct Support, and General Support Maintenance Manual for Diesel Engine Assembly, Model L70AE-DRGFR (Nov 00)
  4. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
- 

**1141-MANT-1220:** Perform operator maintenance on a MEP-803A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.



3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
  2. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
  3. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
  4. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
  5. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  6. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  7. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
  8. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
- 

**1141-MANT-1221:** Perform operator maintenance on a MEP-813A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
2. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
3. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
4. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May

- 01)
5. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  6. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
  7. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinders, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
  8. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
- 

**1141-MANT-1222:** Perform operator maintenance on a MEP 805A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  2. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
  3. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)
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**1141-MANT-1223:** Perform operator maintenance on a MEP-815A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  2. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
  3. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)
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**1141-MANT-1224:** Perform operator maintenance on a MEP-805B 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
2. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2

- (Oct 96)
3. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)
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**1141-MANT-1225:** Perform operator maintenance on a MEP-815B 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references,

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  2. TM 09249B/09246B-24p/2 Unit, and Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805B/MEP-815B (Aug 00), w/Erratum (Aug 92)
  3. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)
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**1141-MANT-1226:** Perform operator maintenance on a MEP-806A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
  2. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
  3. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
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**1141-MANT-1227:** Perform operator maintenance on a MEP-816A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
2. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)

3. TM 09244B/09245B-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 60 kW, MEP-806B/MEP-816B

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**1141-MANT-1228:** Perform operator maintenance on a MEP-806B 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
2. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
3. TM 9-6115-663-13&P Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, Diesel Engine Driven, 2 ½ Ton Trailer Mounted, 60kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), & Ch 3 (May 96)

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**1141-MANT-1229:** Perform operator maintenance on a MEP-816B 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** so that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
  2. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
  3. TM 9-6115-663-13&P Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, Diesel Engine Driven, 2 ½ Ton Trailer Mounted, 60kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), & Ch 3 (May 96)
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**1141-MANT-1230:** Perform operator maintenance on a MEP-007A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** so that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
2. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
3. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4

- (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
4. TM 9-6115-646-14&P Operator, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, PU-495A/G or PU-495B/G with MEP-007a or MEP-007B (May 90), w/ Ch 1 (May 97)

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**1141-MANT-1231:** Perform operator maintenance on a MEP-007B 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** so that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
2. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
3. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kW, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
4. TM 9-6115-646-14&P Operator, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, PU-495A/G or PU-495B/G with MEP-007a or MEP-007B (May 90), w/ Ch 1 (May 97)

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**1141-MANT-1232:** Perform operator maintenance on a MEP-807A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician



**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** so that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)

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**1141-MANT-1233:** Comply with a Modification Instruction (MI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, effected equipment, tools, and parts.

**STANDARD:** By applying the modification(s) in accordance with the instructions.

**PERFORMANCE STEPS:**

1. Review modification instructions.
2. Apply modification.
3. Test modification.
4. Record modification in equipment record jacket.

**REFERENCES:**

1. Appropriate Technical Manuals

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**1141-XENG-1501:** Assist in establishing a generator site

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With generator(s), spill containment equipment/material, material handling equipment, tools, and references.

**STANDARD:** To ensure stable support for the generators and so that environmental and safety issues are addressed per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Evaluate site (level, firm, etc.).
3. Install spill containment.
4. Install generator(s).
5. Ground generator(s).
6. Install warning signs.

**REFERENCES:**

1. FM 20-3 Camouflage
2. FM 20-31 Electric Power Generation in the Field
3. FM 5-424 Theater of Operations Electrical Systems
4. TC 11-6 Grounding Techniques
5. TM 5-690 Grounding and Bonding in Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities
6. TM 9406-15 Grounding Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Forklift

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**1141-XENG-1502:** Establish a field grounding system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a generator site, an electrical power distribution system, grounding material (rods, wire, plates), and references.

**STANDARD:** So that any electrical fault in the generator or distribution system will be safely dissipated to the ground, preventing injury to personnel or damage to equipment.

**PERFORMANCE STEPS:**

1. Review the references.
2. Install grounding rods.
3. Measure resistance to ground.
4. Record findings.

5. Analyze findings.
6. Make corrections (repeating as necessary).

**PREREQUISITE EVENTS:**

1141-XENG-1501

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
2. FM 5-422 Engineer Prime Power Operations
3. FM 5-424 Theater of Operations Electrical Systems
4. TC 11-6 Grounding Techniques
5. TM 5-690 Grounding and Bonding in Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities
6. TM 9406-15 Grounding Procedures
7. National Electrical Code

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**1141-XENG-1503:** Operate a ground resistance tester

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a grounding system, established ground resistance parameters, and references.

**STANDARD:** To measure the resistance provided by the grounding system.

**PERFORMANCE STEPS:**

1. Review the references and grounding parameters.
2. Perform pre-operations checks.
3. Determine correct settings for the resistance tester.
4. Connect test leads/cables.
5. Test the ground.
6. Record the findings.
7. Perform after-operations checks.
8. Analyze the findings.

**REFERENCES:**

1. TC 11-6 Grounding Techniques
  2. TM 5-690 Grounding and Bonding in Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities
  3. TM 9406-15 Grounding Procedures
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**1141-XENG-1504:** Climb a pole/tree

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a requirement to establish an overhead electrical power distribution system, a lineman's tool kit, and safety equipment.

**STANDARD:** To the height designated for the distribution system, circumnavigating the pole/tree 360 degrees (as necessary) while installing overhead distribution equipment/wiring, and descending.

**PERFORMANCE STEPS:**

1. Inspect pole/tree.
2. Put on required equipment.
3. Climb pole/tree.
4. Belt in.
5. Perform required work (circumnavigating pole/tree as necessary).
6. Unbelt.
7. Descend pole/tree.

**RELATED EVENTS:**

1141-XENG-1505

1141-ADMN-1104

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
2. FM 5-424 Theater of Operations Electrical Systems
3. SL-3-01204A Components List for Tool Kit, Lineman's (Mar 98), w/Ch 1 (Apr99)

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**1141-XENG-1505:** Assist in constructing an overhead electric power distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an overhead electric power distribution system plan, equipment, materials, Lineman's Tool Kit, and references.

**STANDARD:** So that electric power is safely distributed in accordance with the system plan, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the field electrical distribution plan.
3. Assist in the installation of the distribution system.
4. Examine the field electrical distribution system to identify problem areas.
5. Ensure all safety rules are observed, violations corrected, and unsafe situations identified and corrected.
6. Post safety/warning signs.
7. Test the system.

**PREREQUISITE EVENTS:**

1141-XENG-1504

**RELATED EVENTS:**

1141-XENG-1510	1141-XENG-1509	1141-XENG-1506
1141-XENG-1507	1141-XENG-1508	

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
2. FM 5-422 Engineer Prime Power Operations
3. FM 5-424 Theater of Operations Electrical Systems
4. TM 5-765 Electric Power Transmission and Distribution

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Generators; Lineman's Tool Kit

**MATERIAL:** Poles; Wire

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**1141-XENG-1506:** Assist in the installation of an over ground electric power distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a field electric power distribution system plan; Mobile Electric Power Distribution Systems (MEPDIS and/or MEPDIS-R); materials, Lineman's Tool Kit, and references.

**STANDARD:** So that electric power is safely distributed in accordance with the system plan, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the field electrical distribution plan.
3. Assist in the installation of buss bars/MEPDIS/MEPDIS-R panels.
4. Assist in the installation of electrical cables/wires.

5. Examine the field electrical distribution system to identify problem areas.
6. Ensure all safety rules are observed, violations corrected, and unsafe situations identified and corrected.
7. Post safety/warning signs.
8. Test the system.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  3. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  4. TC 11-6 Grounding Techniques
  5. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) & Supersedes TM 08712A-14/1 (May98)
  6. TM 5-690 Grounding and Bonding in Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) Facilities
  7. TM 9406-15 Grounding Procedures
  8. Appropriate Technical Manuals
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**1141-XENG-1507:** Assist in constructing an underground electric power distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an underground field electric power distribution system plan, equipment, materials, Lineman's Tool Kit, and references.

**STANDARD:** So that electric power is safely distributed in accordance with the system plan, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the field electrical distribution plan.
3. Assist in the installation of the distribution system.
4. Examine the field electrical distribution system to identify problem areas.
5. Ensure all safety rules are observed, violations corrected, and unsafe situations identified and corrected.
6. Post safety/warning signs.
7. Test the system.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field

2. FM 5-424 Theater of Operations Electrical Systems
3. TM 5-765 Electric Power Transmission and Distribution

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Backhoe

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**1141-XENG-1508:** Splice a field wire connection

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With wire, a Lineman's Tool Kit, and references.

**STANDARD:** Ensuring a strong connection and no additional electrical resistance through the splice, per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Determine type of splice required.
3. Strip wire.
4. Construct the splice.
5. Test the splice.
6. Insulate bare wires.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
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**1141-XENG-1509:** Construct a field wiring harness

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a field electrical distribution plan, Lineman's Tool Kit, a bill of materials (BOM), and the references.

**STANDARD:** So that the requirements of the electrical distribution plan are supported, per the references.

**PERFORMANCE STEPS:**

1. Review the references.

2. Review the electrical distribution plan.
3. Gather required materials.
4. Assemble wiring harness, testing connections.
5. Test wiring harness.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. FM 5-424 Theater of Operations Electrical Systems
  3. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
  4. TM 09049a-12&P/1 Operation and Maintenance Including Components List and Repair Parts List for Field Wiring Harness, Model MLK-0000 (Sep89), w/ch 1 (Oct 92), Ch 2 (Aug 94), & Ch 3 (Apr 95)
  5. National Electrical Code
- 

**1141-XENG-1510:** Install a field wiring harness

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a temporary field structure, Lineman's Tool Kit, bill of materials (BOM), all materials listed on the BOM, and the references.

**STANDARD:** So that the structure is wired to support the unit's mission, per the references.

**PERFORMANCE STEPS:**

1. Review electrical plan.
2. Place the wiring harness in the structure.
3. Test the system.

**PREREQUISITE EVENTS:**

1141-XENG-1509

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. FM 5-424 Theater of Operations Electrical Systems
  3. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
  4. TM 09049a-12&P/1 Operation and Maintenance Including Components List and Repair Parts List for Field Wiring Harness, Model MLK-0000 (Sep89), w/ch 1 (Oct 92), Ch 2 (Aug 94), & Ch 3 (Apr 95)
  5. National Electrical Code
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**1141-XENG-1511:** Connect an electric motor

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment containing an electric motor, tools, test equipment, electric power source, and the references.

**STANDARD:** So that there is proper phasing.

**PERFORMANCE STEPS:**

1. Review equipment references.
2. Wire equipment.
3. Inspect the wiring.
4. Ensure proper operation.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
  2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
  3. EMC Electric Motor Controls by American Technical Publishers, Inc.
  4. FM 5-424 Theater of Operations Electrical Systems
  5. FM 9-243 Use and Care of Hand Tools and Measuring Tools
  6. IC Industrial Controls by Energy Concepts, Inc.
  7. SL-3-01204A Components List for Tool Kit, Lineman's (Mar 98), w/Ch 1 (Apr99)
  8. TC 11-6 Grounding Techniques
  9. National Electrical Code
- 

**1141-XENG-1512:** Balance an electrical load

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a field electrical power generation and distribution system, system plans, Lineman's Tool Kit, multimeter, amprobe, and the references,

**STANDARD:** so that the electrical power generation and distribution system is balanced to within 10% of the connected load.

**PERFORMANCE STEPS:**

1. Review the system plan.
2. Examine the distribution system to determine power consumption of phases

- and components.
3. Ensure power is measure accurately on all phases.
  4. Ensure calculation of percent of unbalance is correct.
  5. Examine plan for redistribution of loads.
  6. Ensure power is measured accurately on all phases after redistribution.
  7. Ensure calculation of percent of balance is correct after redistribution.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. FM 5-424 Theater of Operations Electrical Systems
  3. National Electrical Code
- 

**1141-XENG-1513:** Operate a floodlight set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, an area to be illuminated, and references.

**STANDARD:** So that designated area is illuminated and the equipment is operated per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Unpack floodlight set.
3. Place applicable environmental materials in place.
4. Set up floodlight set.
5. Perform pre-op checks.
6. Illuminate designated area.
7. Perform operator maintenance.
8. Shut down floodlight set.
9. Perform after operation inspection.
10. Repack floodlight set.

**REFERENCES:**

1. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
2. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
3. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
4. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP 803\_ 10kW 60Hz Generator Set

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the Model SM-4A3-0 Skid Mounted Floodlight Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the Model SM-4A3-0 Skid Mounted Floodlight Set.

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**1141-XENG-1514:** Operate a MEP-531A 2kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per the generator's operator manual.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform during operations checks.
7. Shut down generator set.
8. Perform after operations checks.

**REFERENCES:**

1. TM 9-6115-662-13&P Operator, Unit, and Direct Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Plant, Diesel Engine Driven, Trailer Mounted, 30kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), Ch 3 (Dec 95) & Ch 4 (May 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-531A 2kW 60Hz Generator Set

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-531A 2kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-531A 2kW 60Hz Generator Set.

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**1141-XENG-1515:** Operate a MEP-831A 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references

**STANDARD:** Per TM 10155A-13/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-831A 3kW 60Hz Generator Set

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-831A 3kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-831A 3kW 60Hz Generator Set.

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**1141-XENG-1516:** Operate a MEP-803A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09247A/09248A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-803A 10kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-803A 10kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-803A 10kW 60Hz Generator Set.

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**1141-XENG-1517:** Operate a MEP-813A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09247A/09248A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.

7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-813A 10kW 400Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-813A 10kW 400Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-813A 10kW 400Hz Generator Set.

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**1141-XENG-1518:** Operate a MEP-805A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09249A/09246A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-805A 30kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-805A 30kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-805A 30kW 60Hz Generator Set.

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**1141-XENG-1519:** Operate a MEP-815A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09249A/09246A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-815A 30kW 400Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-815A 30kW 400Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-815A 30kW 400Hz Generator Set.

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**1141-XENG-1520:** Operate a MEP-805B 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09249B/09246B-14.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-805B 30kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-805B 30kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-805B 30kW 60Hz Generator Set.

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**1141-XENG-1521:** Operate a MEP-815B 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician



**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09249B/09246B-14.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-815B 30kW 400Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-815B 30kW 400Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-815B 30kW 400Hz Generator Set.

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**1141-XENG-1522:** Operate a MEP-806A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09244A/09245A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.

2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kW, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-806A 60kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-806A 60kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-806A 60kW 60Hz Generator Set.

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**1141-XENG-1523:** Operate a MEP-816A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09244A/09245A-10/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-816A 60kW 400Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-816A 60kW 400Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-816A 60kW 400Hz Generator Set.

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**1141-XENG-1524:** Operate a MEP-806B 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09244B/09245B-14/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-806B 60kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-806B 60kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-806B 60kW 60Hz Generator Set.

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**1141-XENG-1525:** Operate a MEP-816B 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 09244B/09245B-14/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-816B 60kW 400Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-816B 60kW 400Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-816B 60kW 400Hz Generator Set.

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**1141-XENG-1526:** Operate a MEP-007A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 07464A-12.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-007A 100kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-007A 100kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-007A 100kW 60Hz Generator Set.

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**1141-XENG-1527:** Operate a MEP-007B 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per TM 07464B-12.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 07464B-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-007B 100kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-007B 100kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-007B 100kW 60Hz Generator Set.

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**1141-XENG-1528:** Operate a MEP-807A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, and references.

**STANDARD:** Per the Operator's Technical Manual.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.

7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
2. TM 07464B-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B
3. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-807A 100kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Electrician Course (CID: M0311B2) are licensed operators of the MEP-807A 100kW 60Hz Generator Set. All other operators will need to be licensed through an authorized licensing program in the Total Force.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-807A 100kW 60Hz Generator Set.

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**1141-XENG-1529:** Parallel generator sets

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With multiple generator sets, tools, cables or conductors, and references.

**STANDARD:** Observing all safety precautions per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the references.
2. Ensure all generator sets units are turned off.
3. Ensure both generators are properly grounded.
4. Ensure all load requirements/voltage requirements are observed.
5. Connect generator sets.
6. Disconnect load from generator.
7. Start generator sets.
8. Synchronize the generators.
9. Perform after-op checks.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
2. FM 5-424 Theater of Operations Electrical Systems

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**1141-XENG-1601:** Assist in installing conduit in a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, a permanent structure, conduit, and tools.

**STANDARD:** Per the NEC (NFPA 70).

**PERFORMANCE STEPS:**

1. Review wiring plans.
2. Bend conduit.
3. Place conduit in the structure.
4. Perform inspection.

**REFERENCES:**

1. National Electrical Code

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**1141-XENG-1602:** Install an interior electrical wiring system in a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), all materials listed on the BOM, and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review applicable section(s) of the reference.
3. Run wiring.
4. Inspect wiring.



**REFERENCES:**

1. National Electrical Code
- 

**1141-XENG-1603:** Install electrical devices in a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review the applicable section(s) or the reference.
3. Attach devices.
4. Test the system.

**REFERENCES:**

1. National Electrical Code
- 

**1141-XENG-1604:** Repair the interior electrical wiring system of a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), all materials listed on the BOM, and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review applicable section(s) of the reference.
3. Run wiring.
4. Inspect wiring.

**REFERENCES:**

1. National Electrical Code
-

**5005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1141-ADMN-2113:** Brief electrical safety to end users

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operation order, a field electrical power generation and distribution system plan, personnel using the system, and references.

**STANDARD:** So that the location of "off limits" areas, meaning of warning signs, prohibited electrical equipment and reasons, emergency procedures, and unsafe conditions are identified.

**PERFORMANCE STEPS:**

1. Review the operation order.
2. Review system plan.
3. Review applicable section(s) of the references.
4. Determine training requirements.
5. Deliver the training to applicable personnel.
6. Evaluate training.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1141-ADMN-2114:** Apply safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With resources, and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.

6. Conduct safety awareness training.
7. Evaluate safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES :**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
  2. FM 100-14 Risk Management
  3. FM 5-424 Theater of Operations Electrical Systems
  4. MCO 3500.27B Operational Risk Management
  5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
  6. MCO 5100.29 Marine Corps Safety Program
  7. MCO 5100.30A Marine Corps Off-Duty and Recreation Safety Program
  8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
  9. MCO 5104.3 Marine Corps Radiation Safety Program
  10. MCO P4790.2 MIMMS Field Procedures Manual
  11. MCO P5090.2A Environmental Compliance and Protection Manual
  12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  15. UNIT SOP Unit's Standing Operating Procedures
  16. National Electrical Code
  17. National Plumbing Code
- 

**1141-ADMN-2115:** Supervise Military Occupational Specialty (MOS) training

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With training resources, records, and references,

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aids/materials as required.
8. Schedule MOS sustainment training.
9. Ensure MOS training is conducted.
10. Maintain lesson plans.
11. Document MOS training.

12. Encourage use of self-directed study and assist in providing resources.
13. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System
  2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  3. MCO 1553.1 The Marine Corps Training and Education System
  4. MCO 1553.3A USMC Unit Training Management Guide
  5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
  6. MCO 3501.7A MCCRES
  7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. MCRP 3-0 A Unit Training Management Guide
  10. MCRP 3-0B How to Conduct Training
  11. UNIT SOP Unit's Standing Operating Procedures
  12. Systems Approach to Training (SAT) Manual
- 

**1141-ADMN-2116:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
- 

**1141-ADMN-2117:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a defective item and references,

**STANDARD:** so that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
- 

**1141-ADMN-2118:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
-

**1141-ADMN-2119:** Monitor maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** Ensuring accuracy of the reports per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY Transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly Material Report.
8. Monitor Weekly LM2 Report.
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4400-16G UMMIPS
  4. MCO P4790.2 MIMMS Field Procedures Manual
  5. TM 4700-15/1H Ground Equipment Record Procedures
  6. UM 4400-124 FMF SASSY Using Unit Procedures
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
- 

**1141-ADMN-2120:** Prepare equipment for embarkation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, unit MAFTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAFTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES) reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references,

**STANDARD:** to support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAFTG II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Mark equipment for transportation/embarkation to include LOGMARS labels.
7. Disassemble, stow, pack, and/or prepare equipment for transportation/embarkation.
8. Coordinate with unit embark personnel to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
  2. FM 101-10-1\_ Organizational, Technical and Logistical Data
  3. FM 55-15 Transportation Reference Data
  4. FM 55-9 Unit Air Movement Planning
  5. FMFM 3-1 Command and Staff Action
  6. FMFM 4-6 Movement of Units in Air Force Aircraft
  7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
  8. MCO 4610.35 USMC Equipment Characteristics File
  9. MCO P3000.18 Marine Corps Planner's Manual
  10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  11. MCO P4600.7\_ USMC Transportation Manual
  12. MCWP 3-31.5 Ship-to-Shore Movement
  13. MCWP 4-11.3 Transportation Operations
  14. TM 4700-15/1H Ground Equipment Record Procedures
  15. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and
  16. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material
- 

**1141-MANT-2351:** Perform operator maintenance on a MEP-016B 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.



**REFERENCES:**

1. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  2. SL-4-05926B/06509B-24P/2 Organizational, Intermediate (Field), (Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz, MEP-016B (Dec 87), w/Ch 1 (Jun 89), Ch 2 (Nov 92), & Ch 3 (Nov 94)
  3. TM 05926B/06509B-12/1 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz. MEP-016B (Jul 87), w/Ch 1 (May 89), & Erratum (May 94)
- 

**1141-MANT-2352:** Perform operator maintenance on a GPND-90E 8kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  2. SL-4-05926B/06509B-24P/2 Organizational, Intermediate (Field), (Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz, MEP-016B (Dec 87), w/Ch 1 (Jun 89), Ch 2 (Nov 92), & Ch 3 (Nov 94)
  3. TM 05926B/06509B-12/1 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz. MEP-016B (Jul 87), w/Ch 1 (May 89), & Erratum (May 94)
- 

**1141-MANT-2353:** Perform operator maintenance on a MEP-003A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  2. SL-4-05684C/06585B Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, MEP-003A/MEP-112A (Oct 83), w/Ch 1 (Apr 86), Ch 2 (May 87), Ch 3 (Jan 88), Ch 4 (Oct 90), Ch 5 (Dec 90), & Ch A (Jan 95)
  3. TM 05684C/05685B-12 MEP-3 Generator Set
- 

**1141-MANT-2354:** Perform operator maintenance on a MEP-112A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)

2. SL-4-05684C/06585B Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, MEP-003A/MEP-112A (Oct 83), w/Ch 1 (Apr 86), Ch 2 (May 87), Ch 3 (Jan 88), Ch 4 (Oct 90), Ch 5 (Dec 90), & Ch A (Jan 95)
  3. TM 05684C/05685B-12 MEP-3 Generator Set
- 

**1141-MANT-2355:** Perform operator maintenance on an OG15WID3T 15kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SI 10578A-12/1 Warranty Procedures for the Generator, 15kw (Apr 99)
- 

**1141-MANT-2356:** Perform operator maintenance on a MMG-25 20kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.

2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  2. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
  3. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
  4. TM 9-6115-646-14&P Operator, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, PU-495A/G or PU-495B/G with MEP-007a or MEP-007B (May 90), w/ Ch 1 (May 97)
- 

**1141-MANT-2357:** Perform operator maintenance on a MEP-005A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  2. SL-4-06858B/06859D Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 30kw, MEP-005A/MEP-114A (Jun 92), w/Ch 1 (Dec 92), Ch A (May 95), and Ch 2 (Nov 96)
  3. TM 06858B/06859D-12 MEP-5 Generator Set
-

**1141-MANT-2358:** Perform operator maintenance on a MEP-114A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  2. SL-4-06858B/06859D Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 30kw, MEP-005A/MEP-114A (Jun 92), w/Ch 1 (Dec 92), Ch A (May 95), and Ch 2 (Nov 96)
  3. TM 06858B/06859D-12 MEP-5 Generator Set
- 

**1141-MANT-2359:** Perform operator maintenance on an E50XWCU 50kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 10488-CD Generator, Trailer Mounted (Oct 00)
- 

**1141-MANT-2360:** Perform operator maintenance on a MEP-006A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
  2. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
  3. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
- 

**1141-MANT-2361:** Perform operator maintenance on a MEP-115A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
2. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
3. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)

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**1141-MANT-2362:** Assist in preventive maintenance checks and services (PMCS) on a Power Distribution System, Electrical Bus Circuit Breaker Panel for the FFSS

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

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**1141-MANT-2401:** Supervise equipment preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician, Section Leader

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, maintenance personnel with tools and repair parts, and references.

**STANDARD:** To ensure all required preventive maintenance is performed and deficiencies recorded per the references.

**PERFORMANCE STEPS:**

1. Review the technical manuals for the air conditioning equipment receiving preventive maintenance.
2. Brief maintenance personnel on preventive maintenance to be performed, answer questions, and discuss safety precautions.
3. Observe the preventive maintenance, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure documentation of maintenance performed.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. Appropriate Technical Manuals
- 

**1141-XENG-2530:** Assist in mounting/dismounting a generator set on a trailer

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a generator set, trailer, forklift or crane, tools, and references.

**STANDARD:** Properly on/from the trailer per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Lift generator set on to trailer.
3. Fasten generator set to trailer.
4. Reverse procedure to dismount generator set.

**REFERENCES:**

1. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
  2. MI-6115-34/18
-



**1141-XENG-2531:** Operate a MEP-016B 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Perform generator set operator maintenance.
2. Start generator set.
3. Perform after operation inspection.
4. Shut down generator set.
5. Ensure all power cables are properly installed.
6. Place applicable environmental materials in place.
7. Review appropriate section of the reference.
8. Perform before operations checks.
9. Set up generator set.

**REFERENCES:**

1. SL-4-05926B/06509B-24P/2 Organizational, Intermediate (Field), (Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz, MEP-016B (Dec 87), w/Ch 1 (Jun 89), Ch 2 (Nov 92), & Ch 3 (Nov 94)
  2. TM 05926B/06509B-12/1 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz. MEP-016B (Jul 87), w/Ch 1 (May 89), & Erratum (May 94)
- 

**1141-XENG-2532:** Operate a GPND-90E 8kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an item of equipment, mechanic's tool box, and the reference.

**STANDARD:** So that equipment will be serviced per the schedule and any deficiencies will be corrected/identified per the reference.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.

2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
  2. SL-4-05926B/06509B-24P/2 Organizational, Intermediate (Field), (Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz, MEP-016B (Dec 87), w/Ch 1 (Jun 89), Ch 2 (Nov 92), & Ch 3 (Nov 94)
  3. TM 05926B/06509B-12/1 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 3kw, 60Hz. MEP-016B (Jul 87), w/Ch 1 (May 89), & Erratum (May 94)
- 

**1141-XENG-2533:** Operate a MEP-003A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-05684C/06585B Components List for Generator Set, Diesel Engine, Skid Mounted, MEP-003A/MEP-112A (Jul 91), w/Ch 1 (Jun 93), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  2. SL-4-05684C/06585B Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, MEP-003A/MEP-112A (Oct 83), w/Ch 1 (Apr 86), Ch 2 (May 87), Ch 3 (Jan 88), Ch 4 (Oct 90), Ch 5 (Dec 90), & Ch A (Jan 95)
  3. TM 05684C/05685B-12 MEP-3 Generator Set
-

**1141-XENG-2534:** Operate a MEP-112A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operation maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-01357B Components List for Soldering and Brazing Outfit, Resistance Heating
  2. SL-4-05684C/06585B Organizational, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, MEP-003A/MEP-112A (Oct 83), w/Ch 1 (Apr 86), Ch 2 (May 87), Ch 3 (Jan 88), Ch 4 (Oct 90), Ch 5 (Dec 90), & Ch A (Jan 95)
  3. TM 05684C/05685B-12 MEP-3 Generator Set
- 

**1141-XENG-2535:** Operate an OG15WID3T 15kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SI 10578A-12/1 Warranty Procedures for the Generator, 15kw (Apr 99)
- 

**1141-XENG-2536:** Operate a MMG-25 20kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
2. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
3. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
4. TM 9-6115-646-14&P Operator, Unit, Direct Support and General Support

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Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, PU-495A/G or PU-495B/G with MEP-007a or MEP-007B (May 90), w/ Ch 1 (May 97)

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**1141-XENG-2537:** Operate a MMG-25 20kW 60Hz Generator Set Synchronizer Box

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
  2. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
  3. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
  4. TM 9-6115-646-14&P Operator, Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, PU-495A/G or PU-495B/G with MEP-007a or MEP-007B (May 90), w/ Ch 1 (May 97)
- 

**1141-XENG-2538:** Operate a MEP-005A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  2. SL-4-06858B/06859D Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 30kw, MEP-005A/MEP-114A (Jun 92), w/Ch 1 (Dec 92), Ch A (May 95), and Ch 2 (Nov 96)
  3. TM 06858B/06859D-12 MEP-5 Generator Set
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**1141-XENG-2539:** Operate a MEP-114A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, and references

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.

5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-06858B/06859D Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-005A/MEP-114A (Jul 91), w/Ch 11 (?), Ch 2 (Oct 79), Ch 3 (Jan 98), & Ch 4 (Nov 02)
  2. SL-4-06858B/06859D Unit, Direct Support, and General Support Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools) for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 30kw, MEP-005A/MEP-114A (Jun 92), w/Ch 1 (Dec 92), Ch A (May 95), and Ch 2 (Nov 96)
  3. TM 06858B/06859D-12 MEP-5 Generator Set
- 

**1141-XENG-2540:** Operate an E50XWCU 50kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
  2. Place applicable environmental materials in place.
  3. Set up generator set.
  4. Perform before operations checks.
  5. Ensure all power cables are properly installed.
  6. Start generator set.
  7. Perform generator set operator maintenance.
  8. Shut down generator set.
  9. Perform after operation inspection.
- 

**1141-XENG-2541:** Operate a MEP-006A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.
6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
  2. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
  3. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)
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**1141-XENG-2542:** Operate a MEP-115A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a generator set, mechanic's tool box, and reference.

**STANDARD:** So that it will apply voltage to appropriate equipment per the reference.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Place applicable environmental materials in place.
3. Set up generator set.
4. Perform before operations checks.
5. Ensure all power cables are properly installed.



6. Start generator set.
7. Perform generator set operator maintenance.
8. Shut down generator set.
9. Perform after operation inspection.

**REFERENCES:**

1. SL-3-00038G/07499A Components List for Generator Set, Diesel Engine Driven, 60kw, Mep-006/MEP-115A (Jul 91), w/Ch 1 (Dec 92), Ch 2 (Feb 94), Ch 3 (Oct 97), & Ch 4 (Jan 98)
2. SL-4-00038G/07499A Unit, Direct and General Support, and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine, Tactical, Skid Mounted, 60kw, MEP-006A/MEP-115A (Jun 95)
3. TM 00038G-12 Operator and Organization Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, 60kw, MEP-006A/MEP-115A (Jun 73), w/Ch 1, (?), Ch 2 (Apr75), Ch 3 (Jul 75), Ch 4 (Aug 77), Ch 5 (Oct 79), Ch 6 (Feb 80), Ch 7 (Dec 81), Ch 8 (May 82), Ch 9 (?), Ch 10 (May 86), Ch 11 (Jun 86, Ch 12 (Jul 87), Ch 13 (Aug 88), Ch 14 (Jan 90), Ch 15 (Jun 90), Ch 16 (Oct 90), & Ch 18 (Feb 91)

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**1141-XENG-2543:** Assist in camouflaging equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote site with equipment.,

**STANDARD:** So that site detection is avoided by routine enemy surveillance.

**PERFORMANCE STEPS:**

1. Determine threats.
2. Identify critical equipment.
3. Identify availability of natural cover and concealment.
4. Select camouflage materials and techniques.
5. Install decoys.
6. Space equipment irregularly (in length and depth).
7. Cover equipment with nets and other materials that blend with background.
8. Inspect camouflaging, from different angles, for ease of detection.

**REFERENCES:**

1. FM 20-3 Camouflage

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**1141-XENG-2544:** Determine electrical support requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, a camp layout, and points of contacts for each section.

**STANDARD:** So that the required electrical support is provided safely.

**PERFORMANCE STEPS:**

1. Review camp layout.
2. Review references.
3. use points of contact to answer questions.
4. Determine support requirements.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1141-XENG-2545:** Identify motor controller requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment containing an electric motor, tools, electric power source, test equipment, and references.

**STANDARD:** So that positive control of the motor will be established per the references.

**PERFORMANCE STEPS:**

1. Determine the motor control.
  2. Wire the motor control.
  3. Inspect the wiring.
  4. Start the motor.
- 

**1141-XENG-2546:** Monitor ground test set measurements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a working ground test set, a grounding system, and references.

**STANDARD:** To ensure a safe ground is maintained per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Determine grounding electrode/system resistance (ohms) to ground requirements for the electrical equipment/system.
3. Review ground test set measurements.
4. Identify potential impact of weather (humidity/temperature) on grounding system.
5. Direct improvements/upgrades to grounding system as necessary.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1141-XENG-2547:** Develop a field electrical support plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a camp layout, equipment requiring power, and references,

**STANDARD:** to support unit mission per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the camp layout.
3. Review the power requirements.
4. Plot generator sites on camp layout.
5. Plot power distribution/wiring harness.
6. Validate plan.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1141-XENG-2548:** Direct field electrical power generator/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an operation order, camp layout, equipment, personnel, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine/review the operation order and camp layout.
2. Determine/review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Supervise the electrical power generation/distribution system installation.
6. Inspect field electrical power generation/distribution system.
7. Correct discrepancies.
8. Brief recovery crew.
9. Supervise the electrical power generation/distribution system recovery.

**REFERENCES:**

1. TM 09406-15 Grounding Procedures for Electromagnetic Interference
- 

**1141-XENG-2549:** Direct field electrical power generation/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, electrical power generation/distribution system, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed electrical power generation/distribution system.
3. Review environmental concerns.
4. Review safety concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of equipment.
8. Brief personnel.
9. Monitor operation of equipment.
10. Ensure records/reports are undated/completed.

**REFERENCES:**

1. FM 5-422 Engineer Prime Power Operations
  2. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
  3. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
  4. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) <sup>1</sup> Supersedes TM 08712A-14/1 (May98)
  5. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1141-XENG-2550:** Direct field electrical power generator/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an operation order, camp layout, equipment, personnel, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine/review the operation order and camp layout.
2. Determine/review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Supervise the electrical power generation/distribution system installation.
6. Inspect field electrical power generation/distribution system.
7. Correct discrepancies.
8. Brief recovery crew.
9. Supervise the electrical power generation/distribution system recovery.

**REFERENCES:**

1. TM 09406-15 Grounding Procedures for Electromagnetic Interference
- 

**1141-XENG-2551:** Develop a rear area security plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote equipment site and given a scenario.

**STANDARD:** To provide physical security from enemy threats for both personnel and equipment.

**PERFORMANCE STEPS:**

1. Assess the site for avenues of approach.
2. Determine how to limit the number of avenues of approach.
3. Determine the location of security check points.
4. Determine lanes of fire.

**REFERENCES:**

1. MCRP 5-12.1C Risk Management (Feb 01)
  2. MCWP 3-41.1 Rear Area Operations
- 

**1141-XENG-2605:** Inspect the interior electrical wiring system of a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), all materials listed on the BOM, and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review applicable section(s) of the reference.
3. Run wiring.
4. Inspect wiring.

**REFERENCES:**

1. National Electrical Code
- 

**1141-XENG-2606:** Design an interior electrical wiring system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of electrical fixtures/appliances to be installed, local code requirements, and references.

**STANDARD:** Per NEC (NFPA 70).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and references.
2. Review list of electrical fixtures/appliances to be installed.
3. Calculate general lighting load.
4. Identify power requirements.
5. Determine code requirements.
6. Size branch circuits.
7. Size over current protection devices.
8. Plot electrical symbols on construction plans.
9. Ensure that the interior electrical wiring system plan conforms to the references and the building's requirements.
10. Determine number of personnel required to install system.
11. Establish a Bill of Materials (BOM), including safety items.
12. Establish a Course of Action (COA).

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
2. National Electrical Code

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**1141-XENG-2607:** Direct interior electrical wiring system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), all materials listed on the BOM, and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review applicable section(s) of the reference.
3. Run wiring.
4. Inspect wiring.

**REFERENCES:**

1. National Electrical Code
-

**1141-XENG-2608:** Direct interior electrical wiring system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Electrician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a structure, construction blueprints, a lineman's tool set, a bill of materials (BOM), all materials listed on the BOM, and the reference.

**STANDARD:** So that the structure will be wired per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the electrical blueprints.
2. Review applicable section(s) of the reference.
3. Run wiring.
4. Inspect wiring.

**REFERENCES:**

1. National Electrical Code
-



ENG & UTIL T&R MANUAL

CHAPTER 6

MOS 1142 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 6

MOS 1142 INDIVIDUAL EVENTS

**6000. PURPOSE.** This chapter includes all individual training events for the Engineer Equipment Electrical Systems Technician. An individual event is an event that a trained Engineer Equipment Electrical Systems Technician would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**6001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4 character identifier. The first four characters represent the MOS (1142).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
MANT - Maintenance  
ADMN - Administration

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer Equipment Electrical Systems Technician individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**6002. INDIVIDUAL CORE CAPABILITIES 1142**

1. ENGINEER EQUIPMENT ELECTRICAL SYSTEMS TECHNICIAN 1142 - Career Progression Philosophy

Engineer Equipment Electrical Systems Technicians serve in the battalions and squadrons of the divisions, air wings, and Marine Logistics Groups. The tour length for all ranks is 24 months. The order in which an Engineer Equipment Electrical Systems Technician moves through the Engineer Community is as follows:

a. Engineer Equipment Electrical Systems Technicians are trained at Utilities Instruction Company, Marine Corps Engineer School, Camp Lejeune, NC.

b. Pvt-SSgt serves at the battalions and squadrons of the divisions, air wings, and Marine Logistics Groups.

c. Sgt-SSgts can serve as instructors at Marine Corps Engineer School, Camp Lejeune, NC, and any independent duty.

2. Billet Description. Engineer Equipment Electrical Systems Technicians are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ENGINEER EQUIPMENT ELECTRICAL SYSTEMS TECHNICIAN

Using knowledge of electrical theory and concepts, and electronic fundamentals, equipment electrical systems technicians repair electric motors, electronic modules, motor control circuits, and electric power generation equipment. These technicians also troubleshoot digital/logic components/circuits and make organizational and intermediate level repairs on the electrical systems of engineer and general supply equipment. Duties include diagnosing problems and making repairs following manuals, schematic diagrams, blue prints, and other specifications, using hand tools, power tools, and electrical and electronic test equipment. Repairs include soldering connections and replacing wires, malfunctioning apparatus, and components, including some faulty mechanical, hydraulic and pneumatic parts on equipment. Noncommissioned officers are afforded the opportunity to attend the Advanced Electrician Course that provides in-depth instruction on the requirements of the National Electric Code and the planning of electrical support, to include determining demand, phase balancing, and voltage drops. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker is available to equipment electrical systems technicians under the United Services Military Apprenticeship program (USMAP).

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as an Engineer Equipment Electrical Systems Technician. The following core skills are identified for MOS 1142:

- a. Repair electric motors.
- b. Repair electronic modules.
- c. Repair motor control circuits.
- d. Repair electric power generation equipment.
- e. Troubleshoot digital/logic components.
- f. Troubleshoot digital/logic circuits.
- g. Repair organizational level electrical systems of engineer and general supply equipment.
- h. Repair intermediate level electrical systems of engineer and general supply equipment.

6. Billet Applicability. The basic duties and core skills for the 1142 MOS are the same throughout the operating forces.

**6003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**6004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1142-ADMN-1101:** Conduct an Operational Risk Assessment (ORA)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Given the inherent dangers involved in working around equipment and electricity, effort must be made to ensure risks are reduced or eliminated by implementing controls.

**BILLETS:** Engineer Equipment Electrical Systems Technician, Section Head, Section SNCOIC

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** So that task/mission effectiveness is increased while loss of personnel and material is minimized through the use of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Implement controls.

**REFERENCES:**

1. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
2. MCRP 5-12.1C Risk Management (Feb 01)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Risk Management Worksheet

---

**1142-ADMN-1102:** Control (Lockout/Tagout) hazardous energy

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Equipment Lockout/Tagout ensures personnel are protected from injury during any servicing or maintenance done on machinery or equipment, where the unexpected energizing, start-up, or release of any type of energy (e.g., steam, electricity, hydraulic, pneumatic, and gravity) could occur.

**BILLETS:** Engineer Equipment Electrical Systems Technician, Section Head, Section SNCOIC

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** So that accidental or inadvertent start-up, or operation that may cause injury to personnel performing maintenance, service, repair, or modification to the equipment is prevented.

**PERFORMANCE STEPS:**

1. Locate all energy isolating devices and hazardous energy sources.
2. Obtain required number of Lockout/Tagout devices.
3. Notify all effected personnel and supervisors.
4. Shut down equipment/turn off circuit.
5. Dissipate or restrain any stored energy.
6. Apply Lockout/Tagout devices.
7. Verify energy is isolated/dissipated (test circuit).
8. Effect required service, maintenance, repairs or modifications to equipment/circuit.
9. Remove Lockout/Tagout devices.
10. Restore equipment/circuit to normal operation.
11. Return Lockout/Tagout devices to program coordinator.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11403 - Lockout/Tagout Checklist.

**UNITS/PERSONNEL:** Lockout/Tagout Program Coordinator

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed information for this event.

---

**1142-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Working around equipment that generates electricity dramatically increases the possibility of electrocution. The ability to safely recover an electric shock victim will save lives.

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with the victim until medical help arrives.
8. Report the incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 9406-15 Grounding Procedures
- 

**1142-ADMN-1104:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references, and given a scenario.

**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authorities.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. MCO 4450.12 Storage and Handling of Hazardous Materials
  2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  3. MCO P5090.2 Environmental Compliance and Protection Manual
  4. MCRP 4-11B Environmental Considerations in Military Operations
  5. Federal, State, and Local Environmental Regulations
  6. Local Standard Operating Procedures (SOP)
-

**1142-ADMN-1105:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify type of first aid required (review MSDS).
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1142-ADMN-1106:** Identify required publications

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a scenario, equipment, and references.

**STANDARD:** So information will be available for accurate completion of work.

**PERFORMANCE STEPS:**

1. Determine equipment National Stock Number (NSN).
2. Determine equipment Identification Number.
3. Determine authorized echelon of maintenance.
4. Obtain publications.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
2. MCO P4790.2C MIMMS Field Manual
3. MCO P5215.17 USMC Technical Publications System
4. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
5. TM 11275-15/3C Characteristics of Engineering Equipment
6. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data

7. UNIT SOP Unit's Standing Operating Procedures

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**1142-ADMN-1107:** Conduct an SL-3 inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, and references.

**STANDARD:** To ensure accountability of all components to sets, kits, chests and major end items per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Obtain Components List (SL-3) for the item.
3. Identify each component using the SL-3.
4. Identify missing components.
5. Identify unserviceable components.
6. Document inventory results.
7. Report any inventory discrepancies and unserviceable components.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  4. UM 4400-124 FMF SASSY Using Unit Procedures
  5. Appropriate Technical Manuals
  6. Local Standard Operating Procedures (SOP)
- 

**1142-ADMN-1108:** Conduct a Limited Technical Inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10254), a Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560), equipment, tools, and references.

**STANDARD:** So that the equipment is inspected for operability and discrepancies identified.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify components.
3. Verify component function/serviceability.
4. Report any discrepancies identified.
5. Complete the NAVMC 10560.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10254): and Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560)

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**1142-ADMN-1109:** Document equipment operation history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524), Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D), and the references.

**STANDARD:** So the NAVMC 10524 and NAVMC 696D are complete with descriptive data, scheduled preventive maintenance intervals, and hours of operation for the equipment are indicated per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Fill out equipment descriptive data on the NAVMC 10524.
3. Fill out equipment descriptive data on the NAVMC 696D.
4. Record hours/days equipment was operated.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524); Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D),

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**1142-ADMN-1110:** Requisition repair parts

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order Shopping List (EROSL) (NAVMC 10925), a list of required parts/components, required unit unique data, equipment technical manuals, and the references.

**STANDARD:** So that the NAVMC 10925 can be processed, ensuring valid requisitions will be created per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals and/or stock lists.
3. Complete the NAVMC 10925 header information.
4. Annotate the repair part/component information on the NAVMC 10925.
5. Submit NAVMC 10925 for input into MIMMS.
6. Follow up/reconcile requisitions, as needed/required.
7. Receipt for parts.
8. Maintain repair project layettes.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order Shopping List (EROSL) (NAVMC 10925)

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**1142-ADMN-1111:** Document equipment service/repair history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10245), and references.

**STANDARD:** So that the NAVMC 10245 is complete with descriptive data and indicates all service/repair actions performed on the equipment per the references.



**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals.
3. Fill out equipment descriptive data on the NAVMC 10245.
4. Annotate the service/repair actions taken on the NAVMC 10245.
5. Submit NAVMC 10245 for input into MIMMS.
6. Reconcile NAVMC 10245 information with data on resulting MIMMS reports.
7. File NAVMC 10245.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

---

**1142-MANT-1201:** Operate a multimeter

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment having an electrical circuit, and references.

**STANDARD:** So that electrical outputs of the circuit are measured.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-operations check.
3. Determine correct setting (AC, DC+/-, resistance, or current).
4. Test the circuit (voltage, resistance, current.)
5. Record measurements/readings.
6. Perform after operation checks.
7. Analyze readings.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. FM 55-509-1 Introduction to Marine Electricity
6. IM 8024B Manufacturer's Instruction Manual for Fluke Model 8024B Digital Multimeter
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 2000-15/4 Power System Reference Manual

9. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Multimeter

---

**1142-MANT-1202:** Operate a Semi Conductor Test Device

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With solid state devices and the references.

**STANDARD:** So that the serviceability of the solid state devices is determined.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-operation checks.
3. Determine correct settings.
4. Test solid state device.
5. Record readings.
6. Perform after operations checks.
7. Analyze readings.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. FM 11-62 Communications-Electronics Fundamentals: Basic Principles, Solid State Power Supplies
6. FM 55-509-1 Introduction to Marine Electricity
7. IM 1000 Manufacturer's Instructions Manual for Huntron Tracker 1000 Series Semi Conductor Test Device Revision 3 w/Ch 8
8. IM 8024B Manufacturer's Instruction Manual for Fluke Model 8024B Digital Multimeter
9. TM 2000-15/4 Power System Reference Manual

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Huntron Tracker 1000 Semi Conductor Test Device

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**1142-MANT-1203:** Load test a generator set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Quality Control  
NCO

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a DE1-0001 100kW Dummy Load, generator set(s), and references.

**STANDARD:** So that the ability of the generator set(s) to safely take a designated electrical load is determined.

**PERFORMANCE STEPS:**

1. Review the references and the generator technical manuals.
2. Connect the dummy load to the generator(s).
3. Perform pre-op checks.
4. Start generator(s).
5. Apply load to generator(s).
6. Perform during operation checks on dummy load.
7. Record dummy load gauge readings.
8. Disconnect load from generator.
9. Shut down generator.
10. Disconnect dummy load.
11. Perform after operation checks.
12. Analyze data collected during test.

**REFERENCES:**

1. SL-4-07500B Repair Parts List for Dummy Load, Generator, Electrical, Model DE1-0001, 100kw (Apr 94), w/Ch 1 (Feb 95)
2. TM 07500B-14 Operation and Maintenance Instructions for Dummy Load, Electrical Model DE1-0001, 100kw (Apr 94), w/ch 1 (Feb 95)
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** DE1-0001 100kW Dummy Load

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed operators of the Model DE1-0001 100kW Electrical Dummy Load.

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**1142-MANT-1204:** Splice a wire connection on equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, wire, and references.

**STANDARD:** Ensuring a strong connection with no additional electrical resistance through the splice, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine type of splice required.
3. Strip wire.
4. Clean components and wires.
5. Construct the splice.
6. Test the splice.
7. Insulate bare wires.

**REFERENCES:**

1. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  2. TM 2000-15/4 Power System Reference Manual
- 

**1142-MANT-1205:** Solder a connection

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With PPE, soldering equipment, flux, and references.

**STANDARD:** Ensuring a strong connection with no electrical resistance, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Don PPE.
3. Determine type of connection required.
4. Clean components and wires.
5. Apply heat to the connection.
6. Apply solder to the connection.
7. Allow connection to cool.
8. Test the connection.

**REFERENCES:**

1. EMR Electric Motor Repair, Third Addition
2. SL-3-01357B Components List for Soldering and Brazing Outfit, Resistance Heating
3. TB SIG 222 Solder and Soldering

4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 2000-15/4 Power System Reference Manual

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**1142-MANT-1206:** Connect electric motor control circuits

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment containing an electric motor, tools, generator (power source), test equipment (multi-meter), electric motor controls, and references.

**STANDARD:** To establish positive control of the electric motor.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify motor type (single-phase, three-phase, split phase).
3. Determine motor voltage requirements.
4. Determine the type motor control required.
5. Attach motor control to electric motor circuit(s).
6. Inspect the wiring.
7. Test motor control functions.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc.
3. EMC Electric Motor Controls by American Technical Publishers, Inc.
4. EMR Electric Motor Repair, Third Addition
5. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
6. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
7. IC Industrial Controls by Energy Concepts, Inc.
8. TM 2000-15/4 Power System Reference Manual
9. Appropriate Technical Manuals

---

**1142-MANT-1207:** Comply with a Modification Instruction (MI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, effected equipment, tools, and parts.

**STANDARD:** By applying the modification(s) in accordance with the instructions.

**PERFORMANCE STEPS:**

1. Review modification instructions.
2. Apply modification.
3. Test modification.
4. Record modification in equipment record jacket.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. Appropriate Technical Manuals
- 

**1142-MANT-1208:** Parallel generator sets

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With multiple generator sets, tools, cables or conductors, and references.

**STANDARD:** Observing all safety precautions per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Ensure all generator sets are turned off.
3. Ensure generator sets are grounded.
4. Ensure all load requirements/voltage requirements are observed.
5. Connect generator sets.
6. Disconnect load from generator.
7. Start generator sets.
8. Synchronize the generators.
9. Apply the load.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. FM 5-424 Theater of Operations Electrical Systems
  3. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  4. TM 9406-15 Grounding Procedures
  5. Appropriate Technical Manuals
-

**1142-MANT-1209:** Perform preventive maintenance checks and services (PMCS) on a Model DE1-0001 100kW Dummy Load

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), generator set, tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 07500B-14 Operation and Maintenance Instructions for Dummy Load, Electrical Model DE1-0001, 100kw (Apr 94), w/ch 1 (Feb 95)
4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 4700-15/1H Ground Equipment Record Procedures
6. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
8. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; Generator Set; Model DE1-0001 100kW Dummy Load

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Operator must be licensed to operate the Model DE1-0001 100kW Electrical Dummy Load.

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed operators of the Model DE1-0001 100kW Electrical Dummy Load.

**1142-MANT-1210:** Perform preventive maintenance checks and services (PMCS) on a floodlight set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), generator set, tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
4. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
5. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
6. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
11. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; Generator Set; Floodlight Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the Floodlight Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1211:** Change a floodlight set lamp

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO), replacement lamps, tools, and references.

**STANDARD:** Ensuring no oils from skin or other sources gets on lamp; that floodlights function, and the ERO is documented showing maintenance performed.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Change the floodlight set lamp.
4. Perform operation checks.
5. Document maintenance performed.

**REFERENCES:**

1. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
  2. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
  3. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
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**1142-MANT-1212:** Perform preventive maintenance checks and services (PMCS) on a MEP-531A 2kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.

6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-531A 2kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-531A 2kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1213:** Perform preventive maintenance checks and services (PMCS) on a MEP-831A 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
4. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
5. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
6. TM 10155A/2815-24/3 Unit, Direct Support, and General Support Maintenance Manual for Diesel Engine Assembly, Model L70AE-DRGFR (Nov 00)
7. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
8. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
9. TM 4700-15/1H Ground Equipment Record Procedures
10. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
11. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-831A 3kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-831A 3kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1214:** Perform preventive maintenance checks and services (PMCS) on a MEP-803A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.

2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
2. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
3. MCO P4790.2C MIMMS Field Manual
4. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
5. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
6. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
7. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
8. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
9. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
10. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
11. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
12. TM 4700-15/1H Ground Equipment Record Procedures
13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
14. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-803A 10kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-803A 10kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1215:** Perform preventive maintenance checks and services (PMCS) on a MEP-813A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
2. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
3. MCO P4790.2C MIMMS Field Manual
4. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
5. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
6. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
7. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
8. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
9. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
10. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
11. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
12. TM 4700-15/1H Ground Equipment Record Procedures
13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
14. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-813A 10kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-813A 10kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1216:** Perform preventive maintenance checks and services (PMCS) on a MEP-805A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-805A 30kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-805A 30kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1217:** Perform preventive maintenance checks and services (PMCS) on a MEP-815A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-815A 30kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-815A 30kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1218:** Perform preventive maintenance checks and services (PMCS) on a MEP-805B 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
6. TM 09249B/09246B-24p/2 Unit, and Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 30kW, MEP-805B/MEP-815B (Aug 00), w/Erratum (Aug 92)



7. TM 09249B/2815-24/3 Unit, Direct Support and General Support Maintenance Manual for Diesel Engine, Model 4045TF151, 4 Cylinder, 4.5 Liter, [MEP-805B/MEP-815B] w/ Erratum
8. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
9. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
10. TM 4700-15/1H Ground Equipment Record Procedures
11. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
12. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-805B 30kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-805B 30kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1219:** Perform preventive maintenance checks and services (PMCS) on a MEP-815B 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program

2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
6. TM 09249B/09246B-24p/2 Unit, and Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805B/MEP-815B (Aug 00), w/Erratum (Aug 92)
7. TM 09249B/2815-24/3 Unit, Direct Support and General Support Maintenance Manual for Diesel Engine, Model 4045TF151, 4 Cylinder, 4.5 Liter, [MEP-805B/MEP-815B] w/ Erratum
8. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
9. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
10. TM 4700-15/1H Ground Equipment Record Procedures
11. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
12. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-815B 30kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-815B 30kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1220:** Perform preventive maintenance checks and services (PMCS) on a MEP-806A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
6. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-806A 60kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-806A 60kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1221:** Perform preventive maintenance checks and services (PMCS) on a MEP-816A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
6. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-816A 60kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-816A 60kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1222:** Perform preventive maintenance checks and services (PMCS) on a MEP-806B 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
6. TM 09244B/09245B-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 60 kW, MEP-806B/MEP-816B
7. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
8. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
9. TM 4700-15/1H Ground Equipment Record Procedures
10. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
11. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-806B 60kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-806B 60kW 60Hz Generator Set.

Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1223:** Perform preventive maintenance checks and services (PMCS) on a MEP-816B 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
6. TM 09244B/09245B-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 60 kW, MEP-806B/MEP-816B
7. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
8. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
9. TM 4700-15/1H Ground Equipment Record Procedures
10. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
11. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-816B 60kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-816B 60kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1224:** Perform preventive maintenance checks and services (PMCS) on a MEP-007A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
6. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun

- 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  8. TM 4700-15/1H Ground Equipment Record Procedures
  9. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
  10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-007A 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-007A 100kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1225:** Perform preventive maintenance checks and services (PMCS) on a MEP-007B 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)



4. SL-4-07464B Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007A w/ Ch 4 & Erratum
5. TM 07464B-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-007B 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-007B 100kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1226:** Perform preventive maintenance checks and services (PMCS) on a MEP-807A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified, per the references.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
4. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
5. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set; MEP-807A 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-807A 100kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1227:** Diagnose an electric motor malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical power source, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.

5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Determine type of electric motor (single-phase/three-phase/split phase/capacitor start).
8. Isolate faulty circuit(s).
9. Trace current/voltage paths in circuits.
10. Isolate faulty component(s).
11. Determine if component fault was caused by a defect elsewhere (repeating steps 8, 9, and/or 10 as required).
12. Determine echelon(s) of maintenance.
13. Document findings.
14. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. EMC Electric Motor Controls by American Technical Publishers, Inc.
2. EMR Electric Motor Repair, Third Addition
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. IC Industrial Controls by Energy Concepts, Inc.
6. MCO P4790.2C MIMMS Field Manual
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 2000-15/4 Power System Reference Manual
9. TM 4700-15/1H Ground Equipment Record Procedures
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
11. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Electrical Power Source; Equipment with Electric Motor

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-1228:** Diagnose a Model DE1-0001 100kW Dummy Load malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), generator set, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 07500B-14 Operation and Maintenance Instructions for Dummy Load, Electrical Model DE1-0001, 100kw (Apr 94), w/ch 1 (Feb 95)
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
6. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Generator Set; Model DE1-0001 100kW Dummy Load

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment

(LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List  
(EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Operator must be licensed to operate the  
Model DE1-0001 100kW Electrical Dummy Load.

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment  
Electrical Systems Technician Course (CID: M03UAA2) are licensed operators  
of the Model DE1-0001 100kW Electrical Dummy Load.

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**1142-MANT-1229:** Diagnose a floodlight set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for  
Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI)  
(NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC  
10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic  
Equipment (TMDE), generator set, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s)  
initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating  
steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-08857A Components List for Floodlight Set, Skid Mounted with Tower, Model SM-4A3-0 (May 91), w/Ch 1 (Jun 93), Ch 2 (Feb 96), & Ch 3 (Feb 98)
3. SL-4-08857A Repair Parts List for Floodlight Set, Skid Mounted (Jun 91), w/Ch 1 (Aug 92)
4. TI 08857A-20/1 Installation of Tactical Quiet MEP-803 10kw 60Hz Generator on Floodlight Set, Model SM-4A3-0 (Jul 00)
5. TM 00857a-14/1 Floodlight Set, Skid Mounted, With Tower (Model Sm-4a3-0)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
9. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Generator Set; Floodlight Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the Floodlight Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1230:** Diagnose a MEP-531A 2kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.

2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1110	1142-ADMN-1108
1142-MANT-1201	1142-MANT-1203	1142-MANT-1202
1142-MANT-1208		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-531A 2kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-531A 2kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1231:** Diagnose a MEP-831A 3kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1110	1142-ADMN-1108
1142-MANT-1208	1142-MANT-1203	1142-MANT-1202
1142-MANT-1201		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-05926B/10155A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, 3kw, 60Hz, MEP-016B/MEP-831A (Sep 04)
3. TM 10155A-13/1 Operator's, Unit, and Direct Support Maintenance Manual for 3kw Tactical Quiet Generator Set, MEP-831A (Nov 00), w/Ch 1 (Sep 02)
4. TM 10155A-23P/2A Unit and Direct Support Maintenance Repair Parts and Special Tools List for 3kw Tactical Quiet Generator Sets, MEP-831A (Oct 02)
5. TM 10155A/2815-24/3 Unit, Direct Support, and General Support Maintenance Manual for Diesel Engine Assembly, Model L70AE-DRGFR (Nov 00)
6. TM 10155A/2815-24p/4 Unit and Direct Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model L70AE-DEGFR (Apr 01)
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures



**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-831A 3kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-831A 3kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1232:** Diagnose a MEP-803A 10kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.

13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1201	1142-MANT-1208
1142-MANT-1202		

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
2. MCO P4790.2C MIMMS Field Manual
3. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
4. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
5. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
6. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
7. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
8. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
9. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
10. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
11. TM 4700-15/1H Ground Equipment Record Procedures
12. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-803A 10kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-803A 10kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

**1142-MANT-1233:** Diagnose a MEP-813A 10kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1201	1142-MANT-1208
1142-MANT-1202		

**REFERENCES:**

1. LI 09247A/09248A-12 Lubrication Instruction for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
2. MCO P4790.2C MIMMS Field Manual
3. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
4. SI 09247A/09248A-24 Warranty Program for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Oct 96)
5. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
6. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)

7. TM 09247A/09248A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 10kw, MEP-803A/MEP-813A (Dec 92), w/Ch 1 (Aug 95) & Ch 2 (Oct 96)
8. TM 09247A/09248A-24/2 Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 10 kW, MEP-803A/MEP-813A
9. TM 09247A/09248A-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Tactical Quiet, 10kw, MEP-803A/MEP-813 (Oct 96)
10. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
11. TM 4700-15/1H Ground Equipment Record Procedures
12. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-813A 10kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-813A 10kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1234:** Diagnose a MEP-805A 30kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-805A 30kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-805A 30kW 60Hz Generator Set.

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Operators must be licensed through an authorized licensing program in the Total Force.

**1142-MANT-1235:** Diagnose a MEP-815A 30kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09249A/09246A-10/1 Operator's Manual for Generator Set, Skid Mounted,

- Tactical Quiet, 30kw, MEP-805A/MEP-815A (Jul 93), w/ Ch 1 (May 95) & Ch 2 (Oct 96)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  6. TM 4700-15/1H Ground Equipment Record Procedures
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-815A 30kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-815A 30kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1236:** Diagnose a MEP-805B 30kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).

8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
5. TM 09249B/09246B-24p/2 Unit, and Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805B/MEP-815B (Aug 00), w/Erratum (Aug 92)
6. TM 09249B/2815-24/3 Unit, Direct Support and General Support Maintenance Manual for Diesel Engine, Model 4045TF151, 4 Cylinder, 4.5 Liter, [MEP-805B/MEP-815B] w/ Erratum
7. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
8. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
9. TM 4700-15/1H Ground Equipment Record Procedures
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-805B 30kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-805B 30kW 60Hz Generator Set.



Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1237:** Diagnose a MEP-815B 30kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1201	1142-MANT-1208
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09249B/09246B-14 Operator, Unit, Direct Support and General Support

- Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 30 kW, MEP-805B/MEP-815B w/ Erratum
5. TM 09249B/09246B-24p/2 Unit, and Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 30kw, MEP-805B/MEP-815B (Aug 00), w/Erratum (Aug 92)
  6. TM 09249B/2815-24/3 Unit, Direct Support and General Support Maintenance Manual for Diesel Engine, Model 4045TF151, 4 Cylinder, 4.5 Liter, [MEP-805B/MEP-815B] w/ Erratum
  7. TM 09249B/2815-24P/4 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for
  8. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  9. TM 4700-15/1H Ground Equipment Record Procedures
  10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-815B 30kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-815B 30kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1238:** Diagnose a MEP-806A 60kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
5. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-806A 60kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-806A 60kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1239:** Diagnose a MEP-816A 60kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1202	1142-MANT-1201
1142-MANT-1208		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)

3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09244A/09245A-10/1 Operator's Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Jul 93), w/Ch 1 (May 95) & Ch 2 (Oct 96)
5. TM 09244A/09245A-24/2 Unit, Direct Support and General Support Maintenance manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806A/MEP-816A (Sep 93), w/Ch 1 (Dec 93), Ch 2 (Jun 95), Ch 3 (Nov 95) & Ch 4 (Oct 96)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-816A 60kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-816A 60kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1240:** Diagnose a MEP-806B 60kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
5. TM 09244B/09245B-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 60 kW, MEP-806B/MEP-816B
6. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-806B 60kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-806B 60kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1241:** Diagnose a MEP-816B 60kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1201	1142-MANT-1203
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual

2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)
5. TM 09244B/09245B-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Generator Set, Skid Mounted, Tactical Quiet, 60 kW, MEP-806B/MEP-816B
6. TM 09245B/2815-24P/3 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List for Diesel Engine, Model 6068TF151, 6 Cylinder, 6.8 Liter, [MEP-806B/MEP-816B] w/ Erratum
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 4700-15/1H Ground Equipment Record Procedures
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-816B 60kW 400Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-816B 60kW 400Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1242:** Diagnose a MEP-007A 100kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.



**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1201	1142-MANT-1208
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-07464A Components List for Generator Set, Diesel Engine Driven, Skid Mounted, MEP-007A/MEP-007B (Sep 91), w/Ch 1 (Aug 94), Ch 2 (Oct 97), & Ch 3 (Jan 98)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. SL-4-07464A Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B w/ Ch 4 & Erratum
5. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-007A 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment

(LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List  
(EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-007A 100kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1243:** Diagnose a MEP-007B 100kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1208	1142-MANT-1202	1142-MANT-1201
1142-MANT-1203		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
3. SL-4-07464B Organizational, Intermediate (Field), (Direct Support and General Support), and Depot Maintenance Repair Parts and Special Tools List for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007A w/ Ch 4 & Erratum
4. TM 07464B-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-007B 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-007B 100kW 60Hz Generator Set. Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1244:** Diagnose a MEP-807A 100kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical load, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-ADMN-1110
1142-MANT-1203	1142-MANT-1201	1142-MANT-1208
1142-MANT-1202		

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SI 6115-12/4 Warranty Procedures for Tactical Quiet Generator Series (May 01)
3. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
4. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; Model DE1-0001 100kW Dummy Load; MEP-807A 100kW 60Hz Generator Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Graduates of the Basic Engineer Equipment Electrical Systems Technician Course (CID: M03UAA2) are licensed as mechanics (not operators) on the MEP-807A 100kW 60Hz Generator Set.

Operators must be licensed through an authorized licensing program in the Total Force.

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**1142-MANT-1245:** Diagnose a Tactical Water Purification System (TWPS) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Assisted by a licensed equipment operator and with Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), electrical power source, tools, and references.

**STANDARD:** So that equipment electrical faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings (accomplished by a Water Support Technician - MOS 1171).
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 10802A-14/1 Tactical Water Purification System
4. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance

Repair Parts and Special Tools List Manual for Tactical Water Purification System

5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; MEP-806B 60kW 60Hz Generator Set (or equivalent power source); Tactical Water Purification System (TWPS)

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**UNITS/PERSONNEL:** Water Support Technician (MOS 1171) licensed to operate the Tactical Water Purification System (TWPS).

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The Water Support Technician (MOS 1171) will assist by advising on proper switch and gauge settings and the functions of components.

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**1142-MANT-1251:** Repair a generator set air intake/exhaust system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).

8. Determine if air intake/exhaust system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Generator Set requiring repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-1252:** Repair a generator set cooling system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.

5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if cooling system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Generator Set requiring repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-1253:** Repair a generator set fuel system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.



3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if fuel system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Generator Set requiring repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-1254:** Repair a generator set lubrication system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if lubrication system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Generator Set requiring repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-1255:** Repair an engineer equipment electrical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; piece of engineer equipment requiring electrical system repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**6005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1142-ADMN-2112:** Apply safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With resources and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.
6. Conduct safety awareness training.
7. Evaluate safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES:**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
2. FM 100-14 Risk Management
3. FM 5-424 Theater of Operations Electrical Systems
4. MCO 3500.27B Operational Risk Management
5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
6. MCO 5100.29 Marine Corps Safety Program
7. MCO 5100.30A Marine Corps Off-Duty And Recreation Safety Program
8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
9. MCO 5104.3 Marine Corps Radiation Safety Program
10. MCO P4790.2 MIMMS Field Procedures Manual
11. MCO P5090.2A Environmental Compliance and Protection Manual
12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
15. UNIT SOP Unit's Standing Operating Procedures
16. National Electrical Code
17. National Plumbing Code

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**1142-ADMN-2113:** Supervise Military Occupational Specialty (MOS) training

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With training resources, records, and references.

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aids/materials as required.
8. Schedule MOS sustainment training.
9. Ensure MOS training is conducted.
10. Maintain lesson plans.
11. Document MOS training.
12. Encourage use of self-directed study and assist in providing resources.
13. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System
2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
3. MCO 1553.1 The Marine Corps Training and Education System
4. MCO 1553.3A USMC Unit Training Management Guide
5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
6. MCO 3501.7A MCCRES
7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
8. MCO P4790.2 MIMMS Field Procedures Manual
9. MCRP 3-0 A Unit Training Management Guide
10. MCRP 3-0B How to Conduct Training
11. UNIT SOP Unit's Standing Operating Procedures
12. Systems Approach to Training (SAT) Manual

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**1142-ADMN-2114:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
- 

**1142-ADMN-2115:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a defective item and references.

**STANDARD:** So that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
- 

**1142-ADMN-2116:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1142-ADMN-2117:** Monitor maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** Ensuring accuracy of the reports per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY Transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly Material Report.
8. Monitor Weekly LM2 Report.
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO 4400-16G UMMIPS
4. MCO P4790.2 MIMMS Field Procedures Manual
5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM 4400-124 FMF SASSY Using Unit Procedures

7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
8. UNIT SOP Unit's Standing Operating Procedures

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**1142-ADMN-2118:** Oversee maintenance related programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Maintenance Chief

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment and references.

**STANDARD:** To enhance unit readiness per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance related programs.
2. Inspect equipment.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Oversee Modification Control program.
6. Oversee Calibration Control program.
7. Oversee New Equipment Warranty program.
8. Oversee Joint Oil Analysis Program (JOAP).
9. Oversee Replacement Evacuation (R&E) program.
10. Oversee Quality Deficiency (QDR) program.
11. Oversee Recoverable Items (WIR) program.
12. Oversee Quality Control (QC) program.
13. Oversee Corrosion Prevention and Control (CPAC) program.
14. Ensure records are updated.

**REFERENCES:**

1. MCO 4105.2 Marine Corps Warranty Program
  2. MCO 4400.194 Class VII Stock Rotation Program
  3. MCO 4731.1 Oil Analysis Program for Ground Equipment
  4. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  5. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
  6. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  7. MCO P4400.82 MIMMS Controlled Item Management Manual
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  10. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
  11. TI-4731-14/1C MC Joint Oil Analysis Program
  12. TM 4700-15/1H Ground Equipment Record Procedures
  13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
  14. UNIT SOP Unit's Standing Operating Procedures
-



**1142-ADMN-2119:** Inspect maintenance actions (quality control)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Quality Control  
NCO

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With repaired equipment, maintenance forms and references.

**STANDARD:** To ensure equipment has been repaired and all documentation is complete per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the Equipment Repair Order.
3. Verify completion of maintenance actions.
4. Verify equipment's operational condition.
5. Reject faulty equipment.
6. Verify equipment closeout.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  4. Appropriate Technical Manuals
- 

**1142-ADMN-2120:** Maintain pre-expended bins

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With pre-expended bins; low cost, high usage hardware items; and the references

**STANDARD:** so that bins are stocked for timely maintenance/repair of equipment per the references.

**PERFORMANCE STEPS:**

1. Separate items by NSN into separate boxes, compartments, or containers labeled with the NSN.
2. Review the reference.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual

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**1142-ADMN-2121:** Maintain Equipment Repair Order (ERO) layettes

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Orders (ERO) (NAVMC 10245), Equipment Repair Order Shopping/Transaction Lists (EROSL) (NAVMC 10925), and the references.

**STANDARD:** to ensure parts are kept in the appropriate layettes until all are received for maintenance/repair of specified equipment.

**PERFORMANCE STEPS:**

1. Review the references.
2. Receive repair parts, annotate EROSL, and place repair parts in appropriate layette.
3. Take corrective action if repair part does not match EROSL.
4. Maintain EROSL in the appropriate layettes.
5. Issue repair parts, and annotate EROSL.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM 4790-5 Users Manual MIMMS

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Orders (ERO) (NAVMC 10245); Equipment Repair Order Shopping/Transaction Lists (EROSL) (NAVMC 10925)

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**1142-ADMN-2122:** Prepare equipment for embarkation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Embarkation NCO, Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, unit MAFTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAFTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES)

reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references,

**STANDARD:** to support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAFTG II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Mark equipment for transportation/embarkation to include LOGMARS labels.
7. Disassemble, stow, pack, and/or prepare equipment for transportation/embarkation.
8. Coordinate with unit embark personnel to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
2. FM 101-10-1\_ Organizational, Technical and Logistical Data
3. FM 55-15 Transportation Reference Data
4. FM 55-9 Unit Air Movement Planning
5. FMFM 3-1 Command and Staff Action
6. FMFM 4-6 Movement of Units in Air Force Aircraft
7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
8. MCO 4610.35 USMC Equipment Characteristics File
9. MCO P3000.18 Marine Corps Planner's Manual
10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
11. MCO P4600.7\_ USMC Transportation Manual
12. MCWP 3-31.5 Ship-to-Shore Movement
13. MCWP 4-11.3 Transportation Operations
14. TM 4700-15/1H Ground Equipment Record Procedures
15. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and
16. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material

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**1142-MANT-2301:** Perform preventive maintenance checks and services (PMCS) on a 5kW-I (indoor) Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2302:** Perform preventive maintenance checks and services (PMCS) on a 5kW-O (outdoor) Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools

4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2303:** Perform preventive maintenance checks and services (PMCS) on a 15kW Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2304:** Assist in preventive maintenance checks and services (PMCS) on a 30kW Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2305:** Assist in preventive maintenance checks and services (PMCS) on a 100kW Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2306:** Assist in preventive maintenance checks and services (PMCS) on a 300kW Power Distribution System (MEPDIS-R)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references,

**STANDARD:** so that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.

6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2307:** Perform preventive maintenance checks and services (PMCS) on a PD-015 15kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals



**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2308:** Assist in preventive maintenance checks and services (PMCS) on a PD-030 30kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2309:** Assist in preventive maintenance checks and services (PMCS) on a PD-100 100kW Power Distribution System (MEPDIS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Inspect the equipment.
5. Service the equipment.
6. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

---

**1142-MANT-2310:** Perform preventive maintenance checks and services (PMCS) on a MEP-016B 3kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

---

**1142-MANT-2311:** Perform preventive maintenance checks and services (PMCS) on a GPND-90E 8kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.

5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2312:** Perform preventive maintenance checks and services (PMCS) on a MEP-003A 10kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures

6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2313:** Perform preventive maintenance checks and services (PMCS) on a MEP-112A 10kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2314:** Perform preventive maintenance checks and services (PMCS) on a OG15WID3T 15kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2315:** Perform preventive maintenance checks and services (PMCS) on a MMG-25 20kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2316:** Perform preventive maintenance checks and services (PMCS) on a MEP-005A 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.

5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2317:** Perform preventive maintenance checks and services (PMCS) on a MEP-114A 30kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures



6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2318:** Perform preventive maintenance checks and services (PMCS) on a E50XWCU 50kW Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2319:** Perform preventive maintenance checks and services (PMCS) on a MEP-006A 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2320:** Perform preventive maintenance checks and services (PMCS) on a MEP-115A 60kW 400Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.
5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2321:** Perform preventive maintenance checks and services (PMCS) on a Combat Operations Center GET trailer generator set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Personal Protective Equipment (PPE), tools, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Review the ERO.
3. Don PPE.
4. Ensure equipment is grounded.

5. Inspect the equipment.
6. Service the equipment.
7. Document the maintenance performed.

**REFERENCES:**

1. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
2. MCO P4790.2C MIMMS Field Manual
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); General Mechanic's Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1142-MANT-2322:** Assist in diagnosing a 3/4-Ton MCS Horizontal Air Conditioner electrical system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.

12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2323:** Assist in diagnosing a 1.5-Ton MCS Environmental Control Unit (ECU) electrical system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.

5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2324:** Assist in diagnosing a 3-Ton MCS Environmental Control Unit (ECU) electrical system malfunction

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2325:** Assist in diagnosing a 5-Ton MCS Environmental Control Unit (ECU) electrical system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)



**1142-MANT-2326:** Assist in diagnosing a 8-Ton MCS Environmental Control Unit (ECU) electrical system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2327:** Diagnose a 5kW-I (indoor) Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures

4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2328:** Diagnose a 5kW-O (outdoor) Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102

1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-MANT-1202
1142-MANT-1201	1142-ADMN-1110	

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2329:** Diagnose a 15kW Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating

- steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
  12. Document findings.
  13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2330:** Diagnose a 30kW Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.

3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2331:** Diagnose a 100kW Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC

10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2332:** Diagnose a 300kW Power Distribution System (MEPDIS-R) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)



**1142-MANT-2333:** Diagnose a Bath Shower Unit electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10006A-14/P1 Shower Facility, Bare Base
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2334:** Diagnose a Bridge Erection Boat electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2335:** Diagnose a Rough Terrain Container Handler electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2336:** Diagnose a Pneumatic Tool and Compressor Outfit electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2337:** Diagnose a High Speed High Mobility Crane electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.

8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2338:** Diagnose a Military All-Terrain Crane (MAC) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2339:** Diagnose a Light Rough Terrain Air Mobile Hydraulic Crane electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI)

(NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2340:** Diagnose an AN/PSS-14 Mine Detecting Set electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician



**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2341:** Diagnose a M9 Armored Combat Earthmover (ACE) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2342:** Diagnose a MC 1085C Multi-Purpose Wheel Mounted Hydraulic Excavator electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2343:** Diagnose a PD-015 15kW Power Distribution System (MEPDIS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
3. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
4. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2344:** Diagnose a PD-030 30kW Power Distribution System (MEPDIS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.

9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
3. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
4. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) Æ Supersedes TM 08712A-14/1 (May98)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2345:** Diagnose a PD-100 100kW Power Distribution System (MEPDIS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC

10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-09124a/09125A/09127A Components List for Power Distribution System, Models PD-100, PD-30, & PD-015 (Dec 95), w/Ch 1 (Jul 99)
3. SL-4-09124a/09125A/09127A Repair Parts for the Distribution System, Models 100kw, 030kw, & 015kw (Dec 94), w/Ch 1 (Jan96) & Ch 2 (Aug 96)
4. TM 09124a/09125a/09127-14/1 Operation and Maintenance for the Power Distribution System (PDIS), Models 100kw, 030kw, & 15kw (Mar00) <sup>1</sup>  
Supersedes TM 08712A-14/1 (May98)
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2346:** Diagnose a MLK-0000 Field Wiring Harness malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-09049A Components List for Field Wiring Harness, Model MLK-0000 (Jan 92)
3. TM 09049a-12&P/1 Operation and Maintenance Including Components List and Repair Parts List for Field Wiring Harness, Model MLK-0000 (Sep89), w/ch 1 (Oct 92), Ch 2 (Aug 94), & Ch 3 (Apr 95)
4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**



**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2347:** Diagnose a Tactical Airfield Fuel Dispensing System electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3 07391B Fuel System, Tactical Airfield
3. TM 10-4320-343-14 350 GPM Pump
4. TM 10-4320-343-24P Unit Direct Support, and General Support, Maintenance Repair Parts and Special Tools List
5. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2348:** Diagnose a 600,000 Gallon Capacity Amphibious Assault Fuel System electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).

11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2349:** Diagnose a MEP-016B 3kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.

5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2350:** Diagnose a GPND-90E 8kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2351:** Diagnose a MEP-003A 10kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2352:** Diagnose a MEP-112A 10kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment

(LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List  
(EROSL) (NAVMC 10925)

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**1142-MANT-2353:** Diagnose a OG15WID3T 15kW Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals



**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2354:** Diagnose a MMG-25 20kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2355:** Diagnose a MMG-25 20kW 60Hz Generator Set Synchronizer Box malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2356:** Diagnose a MEP-005A 30kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.

9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2357:** Diagnose a MEP-114A 30kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.

2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2358:** Diagnose an E50XWCU 50kW Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC

10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2359:** Diagnose a MEP-006A 60kW 60Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2360:** Diagnose a MEP-115A 60kW 400Hz Generator Set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1110                      1142-ADMN-1111                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set



**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2361:** Diagnose a Combat Operations Center GET trailer generator set malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures

4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2362:** Diagnose a Motorized Road Grader electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106

1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111	1142-ADMN-1108	1142-MANT-1202
1142-MANT-1201	1142-ADMN-1110	

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2363:** Diagnose a Helicopter Expedient Refueling System (HERS) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating

- steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
  12. Document findings.
  13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-07387C Helicopter Expedient Refueling System
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
6. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2364:** Diagnose a Containerized Batch Laundry (CBL) unit electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.

2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2365:** Diagnose a M17MCHF Lightweight Decontamination System electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC

10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1110                      1142-ADMN-1111                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2366:** Diagnose a Trailer-Mounted Concrete Mixer electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2367:** Diagnose a SIXCON Fuel Pump Module electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. Sl-4-09003A Fuel Pump Module ( Sixcon )
3. TM 09003A/ 09002A-15&P/lw/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components ( List Sixcon )
4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**



**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2368:** Diagnose a SIXCON Water Pump Module electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. SL-3-08922C Repair Parts list, Pump Unit 125 GPM

3. SL-4-08922C Pump Unit 125 GPM
4. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
5. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
6. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2369:** Diagnose a 350 GPM Water Pump unit electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10-4320-343-14 350 GPM Pump
3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
4. TM 4700-15/1H Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2370:** Diagnose a 125 GPM Water Pump set electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).

9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2371:** Assist in diagnosing a VM405 MAX EL Enhanced Refrigeration Unit (ERU) electrical system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.

2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1110                      1142-MANT-1201  
1142-MANT-1202                      1142-ADMN-1108

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 10673A-10/1 Enhanced Refrigeration Unit
4. TM 10673A-12-2 ERU TM Manual
5. TM 10673A-30P-3 ERU Parts Book
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2372:** Diagnose a Riverine Assault Craft (RAC) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2373:** Diagnose a Self Propelled Vibratory Compactor electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2374:** Diagnose a Motorized Earth Moving Scraper electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set



**1142-MANT-2375:** Diagnose a Truck Mounted Self Propelled Airfield Runway Sweeper Vacuum Cleaner electrical malfunction

**SUSTAINMENT INTERVAL:** 24 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

### PERFORMANCE STEPS:

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

1142-ADMN-1102 1142-ADMN-1106

1142-ADMN-1108	1142-ADMN-1111	1142-MANT-1202
1142-MANT-1201	1142-ADMN-1110	

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2376:** Diagnose a 600 GPM Water Pumping Assembly electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2377:** Diagnose a MC1150E Full Tracked Tractor (with angle blade and winch) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2378:** Diagnose a D7G Low Speed Full Tracked Tractor electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.

8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2379:** Diagnose a MC1155E Full Tracked Tractor (with multi-purpose bucket) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2380:** Diagnose a JD410 Wheeled Loader Backhoe Tractor electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI)

(NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2381:** Diagnose a Small Emplacement Excavator (SEE) All Wheel Drive Tractor electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)



**1142-MANT-2382:** Diagnose a 420D IT Backhoe Loader (BHL) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2383:** Diagnose a Extendable Boom Forklift (EBFL) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2384:** Diagnose a Light Capacity Rough Terrain Forklift (LRTF) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2385:** Diagnose a JD644E Multi-Purpose Articulated Steering Rubber Tired Tractor (TRAM) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2386:** Diagnose a Reverse Osmosis Water Purification Unit (ROWPU) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.

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8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202

1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

**1142-MANT-2387:** Diagnose a Lightweight Water Purification System (LWPS) electrical malfunction

**EVALUATION-CODED:** NO**SUSTAINMENT INTERVAL:** 12 months**BILLETS:** Engineer Equipment Electrical Systems Technician**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2388:** Diagnose a Small Mobile Water Chiller electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC

10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2389:** Diagnose a Trailer Mounted Arc Welding Machine electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician



**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 04055D-14&P Marine Corps Tactical Welding Shop
3. TM 04055P-15/1 Marine Corps Tactical Welding Shop
4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment

(LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List  
(EROSL) (NAVMC 10925)

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**1142-MANT-2390:** Diagnose a Marine Corps Tactical Welding Shop electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 04055D-14&P Marine Corps Tactical Welding Shop
3. TM 04055P-15/1 Marine Corps Tactical Welding Shop
4. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
5. TM 4700-15/1H Ground Equipment Record Procedures

6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
7. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2391:** Diagnose a Power Distribution System, Electrical Bus Circuit Breaker Panel for the FFSS electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
12. Document findings.
13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102

1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108	1142-ADMN-1111	1142-MANT-1202
1142-MANT-1201	1142-ADMN-1110	

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2392:** Diagnose a Field Food Service System (FFSS) electrical malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure equipment is grounded.
5. Ensure any stored/hazardous energy is dissipated/controlled.
6. Check switches/gauges for correct settings.
7. Isolate faulty circuit(s).
8. Trace current/voltage paths in circuits.
9. Isolate faulty component(s).
10. Determine if component fault was caused by a defect elsewhere (repeating

- steps 7, 8, and/or 9 as required).
11. Determine echelon(s) of maintenance.
  12. Document findings.
  13. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2393:** Diagnose a digital component malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.

4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Verify component function.
11. Test component.
12. Determine echelon(s) of maintenance.
13. Document findings.
14. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111                      1142-ADMN-1108                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

---

**1142-MANT-2394:** Diagnose a digital/logic circuit malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Review equipment technical manuals/wiring diagrams/schematics.
3. Don PPE.
4. Ensure any stored/hazardous energy is dissipated/controlled.
5. Check switches/gauges for correct settings.
6. Isolate faulty circuit(s).
7. Trace current/voltage paths in circuits.
8. Isolate faulty component(s).
9. Determine if component fault was caused by a defect elsewhere (repeating steps 6, 7, and/or 8 as required).
10. Determine echelon(s) of maintenance.
11. Document findings.
12. Initiate EROSL (if required).

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1108                      1142-ADMN-1111                      1142-MANT-1202  
1142-MANT-1201                      1142-ADMN-1110

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE) [Multimeter]; General Mechanic's Tool Set; Electrical Equipment Repair Tool Set

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925)

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**1142-MANT-2401:** Assist in mounting/dismounting a generator set on a trailer

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a generator set, trailer, forklift or crane, tools, and references.

**STANDARD:** To support mobility per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Lift generator set on to trailer.
3. Fasten generator set to trailer.
4. Reverse procedure to dismount generator set.

**REFERENCES:**

1. MI 6115-24/24C Trailer Mounting of 10kw Generators on M116A2/3 Series Trailer (Jul 04)
  2. MI-6115-34/18
- 

**1142-MANT-2402:** Repair a general supply equipment electrical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1106                      1142-ADMN-1102

**RELATED EVENTS:**

1142-ADMN-1111

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools



3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; piece of general supply equipment requiring electrical system repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-2403:** Repair a digital/logic circuit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With Equipment Repair Order (ERO) (NAVMC 10245), Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560), Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925), Personal Protective Equipment (PPE), Test Measurement and Diagnostic Equipment (TMDE), repair parts from ERO layette, tools, and references.

**STANDARD:** So that the circuit functions/operates as specified in the technical manuals.

**PERFORMANCE STEPS:**

1. Review the LTI/ERO.
2. Inventory parts in ERO layette.
3. Review equipment technical manuals.
4. Don PPE.
5. Remove faulty part(s).
6. Clean area for new part(s).
7. Attach new part(s).
8. Determine if system fault was caused by a defect elsewhere.
9. Test repairs.
10. Document repairs.

**PREREQUISITE EVENTS:**

1142-ADMN-1102                      1142-ADMN-1106

**RELATED EVENTS:**

1142-ADMN-1111                      1142-MANT-1204                      1142-MANT-1205

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
5. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal Protective Equipment (PPE); Test Measurement and Diagnostic Equipment (TMDE); General Mechanic's Tool Set; Electrical Equipment Repair Tool Set; piece of equipment requiring electrical system repair

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245); Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (LTI) (NAVMC 10560); Equipment Repair Order Shopping/Transaction List (EROSL) (NAVMC 10925); repair parts

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**1142-MANT-2404:** Supervise equipment preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Maintenance Chief, Section Head

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the technical manuals for the equipment receiving preventive maintenance.
2. Brief personnel on preventive maintenance to be performed, answer questions, and discuss safety precautions.
3. Observe the preventive maintenance, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure documentation of maintenance performed.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

6. UNIT SOP Unit's Standing Operating Procedures
7. Appropriate Technical Manuals

---

**1142-MANT-2405:** Supervise equipment corrective maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Maintenance Chief, Section Head

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To ensure that all required corrective maintenance actions are performed and deficiencies recorded per the references.

**PERFORMANCE STEPS:**

1. Review the technical manuals for the equipment receiving corrective maintenance.
2. Brief personnel on repairs to be made, answer questions, and discuss safety precautions.
3. Observe the corrective maintenance, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure documentation of maintenance performed.

**REFERENCES:**

1. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. Appropriate Technical Manuals

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**1142-XENG-2601:** Assist in camouflaging equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote site with equipment.

**STANDARD:** So that site detection is avoided by routine enemy surveillance.

**PERFORMANCE STEPS:**

1. Determine threats.
2. Identify critical equipment.
3. Identify availability of natural cover and concealment.
4. Select camouflage materials and techniques.
5. Install decoys.
6. Space equipment irregularly (in length and depth).
7. Cover equipment with nets and other materials that blend with background.
8. Inspect camouflaging, from different angles, for ease of detection.

**REFERENCES:**

1. FM 20-3 Camouflage
- 

**1142-XENG-2602:** Determine maintenance contact team Engineer Equipment Electrical System Technician support requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician, Maintenance Chief, Section Head

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a requirement to provide maintenance/repairs of engineer/general supply equipment electrical systems at a forward location.

**STANDARD:** So that the equipment is efficiently and effectively repaired.

**PERFORMANCE STEPS:**

1. Review the requirements.
2. Determine numbers of equipment requiring maintenance/repair.
3. Determine numbers of personnel required to support the quantity of equipment.
4. Review equipment technical manual to determine repair parts requirements.
5. Assemble parts block
6. Assign personnel.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. Appropriate Technical Manuals
- 

**1142-XENG-2603:** Develop a rear area security plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Electrical Systems Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote equipment site and given a scenario.

**STANDARD:** To provide physical security from enemy threats for both personnel and equipment.

**PERFORMANCE STEPS:**

1. Assess the site for avenues of approach.
2. Determine how to limit the number of avenues of approach.
3. Determine the location of security check points.
4. Determine lanes of fire.

**REFERENCES:**

1. MCRP 5-12.1C Risk Management (Feb 01)
  2. MCWP 3-41.1 Rear Area Operations
-

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CHAPTER 7

MOS 1161 INDIVIDUAL EVENTS

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CHAPTER 7

MOS 1161 INDIVIDUAL EVENTS

**7000. PURPOSE.** This chapter includes all individual training events for the Refrigeration and Air Conditioning Technician. An individual event is an event that a trained Refrigeration and Air Conditioning Technician would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**7001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1161).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
ADMN - Administration  
MANT - Maintenance

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Refrigeration and Air Conditioning Technician individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**7002. INDIVIDUAL CORE CAPABILITIES 1161**

1. REFRIGERATION AND AIR CONDITIONING TECHNICIAN 1161 - Career Progression Philosophy

Refrigeration and Air Conditioning Technicians serve in the Engineer Support Battalion and Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which a Refrigeration and Air Conditioning Technicians moves through the Engineer Community is as follows:

a. Students will be trained at Marine Detachment Aberdeen Proving Ground, MD.

b. Refrigeration and Air Conditioning Technicians will be assigned to the operating forces at the MLG and MAW.

2. Billet Description. Refrigeration and Air Conditioning Technicians are trained, equipped, and assigned to specific units in the operating forces.

#### **MISSION OF REFRIGERATION AND AIR CONDITIONING TECHNICIAN**

Refrigeration and Air Conditioning technicians must be certified by the Environmental Protection Agency (EPA) to handle Chlorofluorocarbons (CFCs). They install, operate, and make organizational and intermediate level repairs on heating, refrigeration, and air conditioning systems, to include automotive, for all ground operations and equipment. These duties include installing refrigerating systems according to engineering specifications; recovery and recycling specified gases or fluids into systems; dismantling and testing malfunctioning systems using electrical, mechanical, and pneumatic testing equipment; and repairing systems by replacing or adjusting defective and worn parts. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker, is available to refrigeration and Air Conditioning technicians under the United Services Military Apprenticeship Program (USMAP).

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as Refrigeration and Air Conditioning Technicians. The following core skills are identified for MOS 1161:

- a. Operate Environmental Control Unit.
- b. Operate Refrigeration Unit.
- c. Perform Environmental Control Unit Preventative Maintenance.
- d. Perform Refrigeration Unit Preventative Maintenance.
- e. Diagnose Environmental Control Unit Malfunction.
- f. Diagnose Refrigeration Unit Malfunction.
- g. Repair Environmental Control Unit Electrical System.
- h. Repair Environmental Control Unit Mechanical System.
- i. Repair Refrigeration Unit Electrical System.
- j. Repair refrigeration Unit Mechanical System.
- k. Diagnose Automotive Air Conditioner Malfunction.
- l. Repair Automotive Air Conditioner Malfunction.
- m. Charge System with Refrigerant.
- n. Solder Electrical Connection.
- o. Repair Tubing.
- p. Obtain Section 609 Technician Certification.
- q. Obtain Section 608 Type I Technician Certification.
- r. Obtain Section 608 Type II Technician Certification.

4. Billet Applicability. The basic duties and core skills for the 1161 MOS are the same throughout the operating forces.



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**7004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1161-ADMN-1101:** Conduct an Operational Risk Assessment (ORA)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Given the inherent dangers involved in working around equipment and electricity, effort must be made to ensure risks are reduced or eliminated by implementing controls.

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** Task/mission effectiveness is increased while loss of personnel and materiel is minimized through the use of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Implement controls.

**REFERENCES:**

1. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
2. MCRP 5-12.1C Risk Management (Feb 01)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Risk Management Worksheet

---

**1161-ADMN-1102:** Control (Lockout/Tagout) hazardous energy

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Equipment Lockout/Tagout ensures personnel are protected from injury during any servicing or maintenance done on machinery or equipment, where the unexpected energizing, start-up, or release of any type of energy (e.g., steam, electricity, hydraulic, pneumatic, and gravity) could occur.

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** Equipment shall be locked out or tagged out to protect against accidental or inadvertent start-up, or operation that may cause injury to personnel performing maintenance, service, repair, or modification to the equipment.

**PERFORMANCE STEPS:**

1. Locate all energy isolating devices and hazardous energy sources.
2. Obtain required number of Lockout/Tagout devices.
3. Notify all effected personnel and supervisors.
4. Shut down equipment/turn off circuit.
5. Dissipate or restrain any stored energy.
6. Apply Lockout/Tagout devices.
7. Verify energy is isolated/dissipated (test circuit).
8. Effect required service, maintenance, repairs or modifications to equipment/circuit.
9. Remove Lockout/Tagout devices.
10. Restore equipment/circuit to normal operation.
11. Return Lockout/Tagout devices to program coordinator.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11403 - Lockout/Tagout Checklist.

**UNITS/PERSONNEL:** Lockout/Tagout Program Coordinator

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed information for this event.

---

**1161-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Working around equipment that generates electricity dramatically increases the possibility of electrocution. The ability to safely recover an electric shock victim will save lives.

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with the victim until medical help arrives.
8. Report the incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 9406-15 Grounding Procedures
- 

**1161-ADMN-1104:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authorities.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. MCO 4450.12 Storage and Handling of Hazardous Materials
  2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  3. MCO P5090.2 Environmental Compliance and Protection Manual
  4. MCRP 4-11B Environmental Considerations in Military Operations
  5. Federal, State, and Local Environmental Regulations
  6. Local Standard Operating Procedures (SOP)
-

**1161-ADMN-1105:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify type of first aid required (review MSDS).
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1161-ADMN-1106:** Obtain EPA Section 609 Technician Certification

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With the aid of instruction and references.

**STANDARD:** To ensure compliance with the Clean Air Act requirements for technician certification, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Pass Section 609 test.
3. Obtain certification.
4. Monitor changes to section 609 of the Clean Air Act.

**REFERENCES:**

1. CFR 82 EPA Section 609

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Certification is obtained from an authorized EPA testing facility.

---



**1161-ADMN-1107:** Obtain EPA Section 608 Type I Technician Certification

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With the aid of instruction and references.

**STANDARD:** To ensure compliance with the Clean Air Act requirements for technician certification, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Pass Section 608 Core test.
3. Obtain certification.
4. Monitor changes to Section 608 of the Clean Air Act.

**REFERENCES:**

1. CFR 82 EPA Section 608

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Certification is obtained from an authorized EPA testing facility.

---

**1161-ADMN-1108:** Obtain EPA Section 608 Type II Technician Certification

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With the aid of instruction and references.

**STANDARD:** To ensure compliance with the Clean Air Act requirements for technician certification, per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Pass Section 608 Core test.
3. Obtain certification.
4. Monitor changes to Section 608 of the Clean Air Act.

**REFERENCES:**

1. CFR 82 EPA Section 608

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Certification is obtained from an authorized EPA testing facility.

---

**1161-ADMN-1109:** Identify required publications

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a scenario, equipment, and references.

**STANDARD:** so information will be available for accurate completion of work.

**PERFORMANCE STEPS:**

1. Determine equipment National Stock Number (NSN).
2. Determine equipment Identification Number.
3. Determine authorized echelon of maintenance.
4. Obtain publications.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO P4790.2C MIMMS Field Manual
  3. MCO P5215.17 USMC Technical Publications System
  4. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  5. TM 11275-15/3C Characteristics of Engineering Equipment
  6. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  7. UNIT SOP Unit's Standing Operating Procedures
- 

**1161-ADMN-1110:** Conduct an SL-3 inventory

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment and references.

**STANDARD:** To ensure accountability of all components to sets, kits, chests and major end items per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Obtain Components List (SL-3) for the item.
3. Identify each component using the SL-3.
4. Identify missing components.
5. Identify unserviceable components.
6. Document inventory results.
7. Report any inventory discrepancies and unserviceable components.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  4. UM 4400-124 FMF SASSY Using Unit Procedures
  5. Appropriate Technical Manuals
  6. Local Standard Operating Procedures (SOP)
- 

**1161-ADMN-1111:** Conduct a Limited Technical Inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10254), a Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560), equipment, tools, and references.

**STANDARD:** To inspect the equipment for operability and identify all discrepancies per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify components.
3. Verify component function/serviceability.
4. Report any discrepancies identified.
5. Complete the NAVMC 10560.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10254): and Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560)

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**1161-ADMN-1112:** Document equipment operation history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524), Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D), and the references.

**STANDARD:** The NAVMC 10524 and NAVMC 696D will be completed so that the descriptive data, scheduled preventive maintenance intervals, and hours of operation for the equipment are indicated per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Fill out equipment descriptive data on the NAVMC 10524.
3. Fill out equipment descriptive data on the NAVMC 696D.
4. Record hours/days equipment was operated.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524); Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D),

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**1161-ADMN-1113:** Requisition repair parts

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order Shopping List (EROSL) (NAVMC 10925), a list of required parts/components, required unit unique data, equipment technical manuals, and the references.

**STANDARD:** So that the NAVMC 10925 can be processed, ensuring valid requisitions will be created per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals and/or stock lists.

3. Complete the NAVMC 10925 header information.
4. Annotate the repair part/component information on the NAVMC 10925.
5. Submit NAVMC 10925 for input into MIMMS.
6. Follow up/reconcile requisitions, as needed/required.
7. Receipt for parts.
8. Maintain repair project layettes.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order Shopping List (EROSL) (NAVMC 10925)

---

**1161-ADMN-1114:** Document equipment service/repair history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10245) and references.

**STANDARD:** The NAVMC 10245 will be completed so that the descriptive data and service/repair actions for the equipment are indicated per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals.
3. Fill out equipment descriptive data on the NAVMC 10245.
4. Annotate the service/repair actions taken on the NAVMC 10245.
5. Submit NAVMC 10245 for input into MIMMS.
6. Reconcile NAVMC 10245 information with data on resulting MIMMS reports.
7. File NAVMC 10245.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

---

**1161-MANT-1201:** Operate a multimeter

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an electrical circuit and references.

**STANDARD:** To measure electrical outputs of the circuit per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-operation checks.
3. Determine correct setting (AC, DC+/-, resistance or current).
4. Test the circuit (voltage, resistance, current).
5. Record measurements/readings.
6. Perform post operation checks.
7. Analyze readings.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current
4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. FM 55-509-1 Introduction to Marine Electricity
6. IM 8024B Manufacturer's Instruction Manual for Fluke Model 8024B Digital Multimeter
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 2000-15/4 Power System Reference Manual
9. Appropriate Equipment Manual

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** multimeter

---

**1161-MANT-1202:** Operate a vacuum pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an electrical power source and references.

**STANDARD:** To ensure proper vacuum operation per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform pre-operation checks.
3. Turn on pump.
4. Check for suction.
5. Turn off pump.

**PREREQUISITE EVENTS:**

1161-ADMN-1108                      1161-ADMN-1107

**REFERENCES:**

1. Appropriate Equipment Manual
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** refrigeration/air conditioning unit, vacuum pump, power source.

---

**1161-MANT-1203:** Solder an electrical connection

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With PPE, soldering equipment, tools, solder, flux, electrical component and references.

**STANDARD:** So that electrical continuity is established in a circuit per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Clean connections and wires.
3. Apply flux.
4. Apply solder.
5. Test the connection.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TB SIG 222 Solder and Soldering

**SUPPORT REQUIREMENTS:**

**MATERIAL:** solder, flux, tools

---

**1161-MANT-1204:** Repair tubing

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With personal protective equipment (PPE), tools, ACR tubing, fittings, solder, flux, emery cloth and references.

**STANDARD:** To provide a leak proof connection per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Size the tube.
3. Prepare tubing and fittings.
4. Apply solder/braze connection as required.
5. Clean the connection.
6. Leak test the connection.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TB SIG 222 Solder and Soldering

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Proper protective personnel equipment, Copper tubing, Acetylene, Flux, Solder, Tools

---

**1161-MANT-1205:** Operate a Bar Gauge Manifold

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ECU/Refrigeration Unit, tools, refrigerant and references.

**STANDARD:** To ensure that the system pressures can be observed per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform pre-operation checks.
3. Attach hoses to the unit.



4. Purge bar gauge manifold hoses.
5. Check for leaks.
6. Observe readings.
7. Analyze readings.
8. Equalize system pressure on the bar gauge manifold.
9. Disconnect hoses from the unit.

**PREREQUISITE EVENTS:**

1161-ADMN-1108                      1161-ADMN-1107

**REFERENCES:**

1. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** refrigeration/air conditioning unit, bar gauge manifold

**MATERIAL:** Provided refrigerant.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certifications.

---

**1161-MANT-1206:** Operate a Refrigerant Recovery/Recycling Unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an electrical power source, ECU/Refrigeration Unit, recovery recycle unit tools, and references.

**STANDARD:** To ensure normal and safe operation per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Attach the hoses to the unit.
3. Perform pre-operation checks.
4. Check for leaks.
5. Turn on station.
6. Perform function checks.
7. Turn off station.

**PREREQUISITE EVENTS:**

1161-ADMN-1108                      1161-ADMN-1107

**REFERENCES:**

1. Appropriate Equipment Manual
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Refrigeration/air conditioning equipment, recovery recycling unit, recovery tank, proper tools, power source.

**MATERIAL:** Provided refrigerant.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA Certification.

---

**1161-MANT-1207:** Charge a system with refrigerant

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With refrigeration/environmental control unit, refrigerant, PPE, tools, power source, and references.

**STANDARD:** To ensure proper operating pressures are obtained per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Evacuate the system.
3. Ensure vacuum is maintained.
4. Charge the system.
5. Verify proper operation.

**PREREQUISITE EVENTS:**

1161-XENG-1503	1161-XENG-1506	1161-MANT-1205
1161-MANT-1202	1161-ADMN-1108	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1106	1161-ADMN-1107
1161-MANT-1206		

**REFERENCES:**

1. Appropriate Equipment Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1208:** Comply with a Modification Instruction (MI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, Modification Instructions, a general mechanic's tool box, and all parts.

**STANDARD:** By applying modification in accordance with instructions.

**PERFORMANCE STEPS:**

1. Review modification instructions.
2. Apply modification.
3. Test modification.
4. Record modification in equipment record jacket.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1161-MANT-1209:** Perform preventive maintenance checks and services (PMCS) on a 3/4-Ton MCS Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1210:** Perform preventive maintenance checks and services (PMCS) on a 1.5-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1211:** Perform preventive maintenance checks and services (PMCS) on a 3-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1212:** Perform preventive maintenance checks and services (PMCS) on a 5-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1213:** Perform preventive maintenance checks and services (PMCS) on an 8-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-1214:** Perform preventive maintenance checks and services (PMCS) on a VM405 MAX EL 4,500 BTU/HR Enhanced Refrigeration Unit (ERU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a refrigeration unit, personal protective equipment (PPE), tools, power source, equipment records, forms, and references.

**STANDARD:** To ensure proper preventative maintenance per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventive Maintenance Checks.
3. Perform the Preventive Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 10673A-12-2 ERU TM Manual

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal protective equipment (PPE), tools, power source, equipment records, forms, and references.

---

**1161-MANT-1215:** Diagnose a 3/4-Ton MCS Horizontal Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.

3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-1216:** Diagnose a 1.5-Ton Environmental Control Unit (ECU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	



**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-1217:** Diagnose a 3-Ton Environmental Control Unit (ECU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-1218:** Diagnose a 5-Ton Environmental Control Unit (ECU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-1219:** Diagnose an 8-Ton Environmental Control Unit (ECU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-1220:** Diagnose a VM405 MAX EL 4,500 BTU/HR Enhanced Refrigeration Unit (ERU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a refrigeration unit, electrical power source, PPE, tools, test measurement, and diagnostic equipment (TMDE), equipment records, forms, and reference.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1201	1161-MANT-1205	1161-MANT-1202
1161-ADMN-1113	1161-ADMN-1111	1161-ADMN-1114
1161-ADMN-1103	1161-MANT-1206	

**REFERENCES:**

1. TM 10673A-12-2 ERU TM Manual
2. TM 10673A-30P-3 ERU Parts Book

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, tools, test measurement, and diagnostic equipment (TMDE), equipment records, forms, and reference.

---

**1161-MANT-1221:** Diagnose an Automotive Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an automotive air conditioner, Refrigeration and Air Conditioning Technician's tool set, Recovery/recycle machine, and reference.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Diagnose the automotive air conditioner defect/fault.
3. Repair the defect/fault.
4. Document the maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1111	1161-MANT-1201	1161-MANT-1205
1161-ADMN-1113	1161-MANT-1206	1161-ADMN-1114
1161-ADMN-1103	1161-MANT-1202	

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The Mechanic must be EPA Section 608/609 Certified.

---

**1161-MANT-1222:** Repair an Environmental Control Unit (ECU) mechanical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, equipment records, forms, refrigerant, repair parts (if needed) and references.

**STANDARD:** To ensure the ECU is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference
2. Review the diagnosis of the fault
3. Recover the refrigerant (if needed)
4. Replace/ adjust/ connect/ service faulty parts (as required)
5. Test the repairs
6. Recharge the system (if needed)
7. Document repairs

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1207
1161-MANT-1204	1161-ADMN-1108	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1107	1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The mechanic must be EPA Section 608/609 certified.

---

**1161-MANT-1223:** Repair a Refrigeration Unit mechanical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a refrigeration unit, personal protective equipment (PPE), tools, power source, equipment records, forms, refrigerant, repair parts (if needed) and references.

**STANDARD:** To return the refrigeration unit to operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Review the diagnosis of the fault.
3. Recover the refrigerant (if needed).
4. Replace/ adjust/ connect/ service faulty parts (as required).
5. Test the repairs.
6. Recharge the system (if needed).
7. Document the repairs.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1207
1161-MANT-1204	1161-ADMN-1108	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1107	1161-ADMN-1114

**REFERENCES:**

1. TM 10673A-12-2 ERU TM Manual
2. TM 10673A-30P-3 ERU Parts Book

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA certification.

---

**1161-MANT-1224:** Repair an Environmental Control Unit (ECU) electrical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, equipment records, forms, repair parts (if needed) and references.

**STANDARD:** To ensure the ECU is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Review the diagnosis of the fault.
3. Replace/ adjust/ connect/ service faulty parts (as required)

4. Test the repairs.
5. Document the repairs.

**PREREQUISITE EVENTS:**

1161-MANT-1201                      1161-ADMN-1103                      1161-ADMN-1114  
1161-MANT-1203

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Personal protective equipment (PPE), tools, power source, equipment records, forms, references, and repair parts (if needed).

---

**1161-MANT-1225:** Repair a Refrigeration Unit electrical system

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a refrigeration unit, personal protective equipment (PPE), tools, power source, equipment records, forms, repair parts (if needed) and references.

**STANDARD:** To return the refrigeration unit to operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Review the diagnosis of the fault.
3. Replace/ adjust/ connect/ service faulty parts (as required).
4. Test the repairs.
5. Document the repairs.

**PREREQUISITE EVENTS:**

1161-MANT-1201                      1161-ADMN-1103                      1161-ADMN-1114  
1161-MANT-1203

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
  2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
  3. Appropriate Technical Manuals
-

**1161-MANT-1226:** Repair an Automotive Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 24 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an automotive air conditioner, personal protective equipment (PPE), tools, power source, equipment records, forms, refrigerant, repair parts (if needed) and references.

**STANDARD:** To ensure the automotive air conditioner is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Review the diagnosis of the fault.
3. Recover the refrigerant (if needed).
4. Replace/ adjust/ connect/ service faulty parts (as required).
5. Test the repairs.
6. Recharge the system (if needed).
7. Document the repairs.

**PREREQUISITE EVENTS:**

1161-MANT-1201	1161-MANT-1203	1161-ADMN-1114
1161-ADMN-1103	1161-MANT-1202	1161-ADMN-1104
1161-MANT-1207	1161-ADMN-1106	1161-MANT-1204
1161-ADMN-1105	1161-MANT-1206	

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certifications.

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**1161-XENG-1501:** Operate a 3/4-Ton Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.



**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-1502:** Operate a 1.5-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-1503:** Operate a 3-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-1504:** Operate a 5-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-1505:** Operate a 8-Ton Environmental Control Unit (ECU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-1506:** Operate a VM405 MAX EL 4,500 BTU/HR Enhanced Refrigeration Unit (ERU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools, power source, and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect refrigeration unit to a power source.
3. Perform pre-operation checks.
4. Start refrigeration unit.
5. Perform operation checks.
6. Turn off refrigeration unit.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 10673A-10/1 Enhanced Refrigeration Unit

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Refrigeration unit, power source.

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**7005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1161-ADMN-2115:** Apply safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With resources and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.
6. Conduct safety awareness training.
7. Evaluate safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES:**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
2. FM 100-14 Risk Management
3. FM 5-424 Theater of Operations Electrical Systems
4. MCO 3500.27B Operational Risk Management
5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
6. MCO 5100.29 Marine Corps Safety Program
7. MCO 5100.30A Marine Corps Off-Duty And Recreation Safety Program
8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
9. MCO 5104.3 Marine Corps Radiation Safety Program
10. MCO P4790.2 MIMMS Field Procedures Manual
11. MCO P5090.2A Environmental Compliance and Protection Manual
12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
15. UNIT SOP Unit's Standing Operating Procedures
16. National Electrical Code
17. National Plumbing Code

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**1161-ADMN-2116:** Supervise Military Occupational Specialty (MOS) training

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With training resources, records, and references.

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aids/materials as required.
8. Schedule MOS sustainment training.
9. Ensure MOS training is conducted.
10. Maintain lesson plans.
11. Document MOS training.
12. Encourage use of self-directed study and assist in providing resources.
13. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System
2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
3. MCO 1553.1 The Marine Corps Training and Education System
4. MCO 1553.3A USMC Unit Training Management Guide
5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
6. MCO 3501.7A MCCRES
7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
8. MCO P4790.2 MIMMS Field Procedures Manual
9. MCRP 3-0 A Unit Training Management Guide
10. MCRP 3-0B How to Conduct Training
11. UNIT SOP Unit's Standing Operating Procedures
12. Systems Approach to Training (SAT) Manual

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**1161-ADMN-2117:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
- 

**1161-ADMN-2118:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a defective item and references.

**STANDARD:** So that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
- 

**1161-ADMN-2119:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1161-ADMN-2120:** Monitor maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** Ensuring accuracy of the reports per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY Transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly Material Report.
8. Monitor Weekly LM2 Report.
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**PREREQUISITE EVENTS:**

1161-ADMN-1114                      1161-ADMN-1113

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO 4400-16G UMMIPS



4. MCO P4790.2 MIMMS Field Procedures Manual
  5. TM 4700-15/1H Ground Equipment Record Procedures
  6. UM 4400-124 FMF SASSY Using Unit Procedures
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1161-ADMN-2121:** Oversee maintenance related programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment and references.

**STANDARD:** To enhance unit readiness per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance related programs.
2. Inspect equipment.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Oversee Modification Control program.
6. Oversee Calibration Control program.
7. Oversee New Equipment Warranty program.
8. Oversee Joint Oil Analysis Program (JOAP).
9. Oversee Replacement Evacuation (R&E) program.
10. Oversee Quality Deficiency (QDR) program.
11. Oversee Recoverable Items (WIR) program.
12. Oversee Quality Control (QC) program.
13. Oversee Corrosion Prevention and Control (CPAC) program.
14. Ensure records are updated.

**REFERENCES:**

1. MCO 4105.2 Marine Corps Warranty Program
2. MCO 4400.194 Class VII Stock Rotation Program
3. MCO 4731.1 Oil Analysis Program for Ground Equipment
4. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
5. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
6. MCO P4400.150E Marine Corps Consumer Level Policy Manual
7. MCO P4400.82 MIMMS Controlled Item Management Manual
8. MCO P4790.2 MIMMS Field Procedures Manual
9. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
10. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
11. TI-4731-14/1C MC Joint Oil Analysis Program
12. TM 4700-15/1H Ground Equipment Record Procedures

13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
14. UNIT SOP Unit's Standing Operating Procedures

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**1161-ADMN-2122:** Inspect maintenance actions (quality control)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With repaired equipment, maintenance forms and references.

**STANDARD:** To ensure equipment has been repaired and all documentation is complete per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the Equipment Repair Order.
3. Verify completion of maintenance actions.
4. Verify equipment's operational condition.
5. Reject faulty equipment.
6. Verify equipment closeout.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
4. Appropriate Technical Manuals

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**1161-ADMN-2123:** Prepare equipment for embarkation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, unit MAFTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAFTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES) reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references.

**STANDARD:** To support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAFTG II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Mark equipment for transportation/embarkation to include LOGMARS labels.
7. Disassemble, stow, pack, and/or prepare equipment for transportation/embarkation.
8. Coordinate with unit embark personnel to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
2. FM 101-10-1\_ Organizational, Technical and Logistical Data
3. FM 55-15 Transportation Reference Data
4. FM 55-9 Unit Air Movement Planning
5. FMFM 3-1 Command and Staff Action
6. FMFM 4-6 Movement of Units in Air Force Aircraft
7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
8. MCO 4610.35 USMC Equipment Characteristics File
9. MCO P3000.18 Marine Corps Planner's Manual
10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
11. MCO P4600.7\_ USMC Transportation Manual
12. MCWP 3-31.5 Ship-to-Shore Movement
13. MCWP 4-11.3 Transportation Operations
14. TM 4700-15/1H Ground Equipment Record Procedures
15. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and
16. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material

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**1161-MANT-2301:** Perform preventive maintenance checks and services (PMCS) on a 9,000 BTU 60Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2302:** Perform preventive maintenance checks and services (PMCS) on an 18,000 BTU 60/400Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2303:** Perform preventive maintenance checks and services (PMCS) on an 18,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2304:** Perform preventive maintenance checks and services (PMCS) on an 18,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2305:** Perform preventive maintenance checks and services (PMCS) on a 36,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2306:** Perform preventive maintenance checks and services (PMCS) on a 36,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2307:** Perform preventive maintenance checks and services (PMCS) on a 60,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2308:** Perform preventive maintenance checks and services (PMCS) on a 54,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.



**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2309:** Perform preventive maintenance checks and services (PMCS) on a 9,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

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**1161-MANT-2310:** Perform preventive maintenance checks and services (PMCS) on a 54,000 BTU 60Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2311:** Perform preventive maintenance checks and services (PMCS) on an 18,000 BTU 60/400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references

**STANDARD:** To ensure maintenance requirements are met per the reference

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2312:** Perform preventive maintenance checks and services (PMCS) on a 36,000 BTU 60/400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.

3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2313:** Perform preventive maintenance checks and services (PMCS) on a 350CUFT Rigid Box Refrigerator

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2314:** Perform preventive maintenance checks and services (PMCS) on a Small Remote Air Conditioner Skid Mounting Assembly

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2315:** Perform preventive maintenance checks and services (PMCS) on a Large Remote Air Conditioner Skid Mounting Assembly

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2316:** Perform preventive maintenance checks and services (PMCS) on a Combat Operations Center GET Trailer environmental control unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, personal protective equipment (PPE), tools, power source, forms, equipment records and references.

**STANDARD:** To ensure maintenance requirements are met per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Perform the Preventative Maintenance Checks.
3. Perform the Preventative Maintenance Services.
4. Document maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1114

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, proper tools.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA Certification.

---

**1161-MANT-2317:** Diagnose a 9,000 BTU 60Hz Horizontal Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2318:** Diagnose an 18,000 BTU 60/400Hz Horizontal Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2319:** Diagnose an 18,000 BTU 60Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2320:** Diagnose an 18,000 BTU 400Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2321:** Diagnose a 36,000 BTU 60Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1206	1161-MANT-1205	1161-MANT-1202
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2322:** Diagnose a 36,000 BTU 400Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1206	1161-MANT-1205	1161-ADMN-1111
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1202	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2323:** Diagnose a 60,000 BTU 60Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1206	1161-MANT-1205	1161-MANT-1202
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2324:** Diagnose a 54,000 BTU 400Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-ADMN-1113	1161-MANT-1206
1161-ADMN-1103	1161-ADMN-1111	1161-MANT-1201
1161-ADMN-1114	1161-MANT-1205	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2325:** Diagnose a 9,000 BTU 60Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1206	1161-MANT-1205	1161-MANT-1202
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

---

**1161-MANT-2326:** Diagnose a 54,000 BTU 60Hz Horizontal Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.

4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

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**1161-MANT-2327:** Diagnose an 18,000 BTU 60/400Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-MANT-1201	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

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**1161-MANT-2328:** Diagnose a 36,000 BTU 60/400Hz Vertical Air Conditioner malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.



**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

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**1161-MANT-2330:** Diagnose a Combat Operations Center GET Trailer environmental control unit malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an environmental control unit, electrical power source, PPE, tools, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**STANDARD:** Identify the faulty condition per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Record finding and order parts if necessary.

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1205
1161-MANT-1201	1161-ADMN-1114	1161-ADMN-1103
1161-ADMN-1113	1161-ADMN-1111	

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Electrical power source, PPE, test measurement and diagnostic equipment (TMDE), equipment records, forms, and references.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have EPA certification.

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**1161-MANT-2331:** Repair a 350CUFT Rigid Box Refrigerator

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, power source, equipment records, forms, repair parts (if needed) and references.

**STANDARD:** To ensure the equipment is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference
2. Review the diagnosis of the fault
3. Replace/ adjust/ connect/ service faulty parts (as required)
4. Test the repairs
5. Document repairs

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1207
1161-MANT-1204	1161-ADMN-1114	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1107	1161-ADMN-1108

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. Appropriate Technical Manuals

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**1161-MANT-2332:** Repair a Small Remote Air Conditioner Skid Mounting Assembly

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, power source, equipment records, forms, repair parts (if needed) and references.

**STANDARD:** To ensure the equipment is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference
2. Review the diagnosis of the fault
3. Replace/ adjust/ connect/ service faulty parts (as required)
4. Test the repairs
5. Document repairs

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1207
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1161-MANT-1204	1161-ADMN-1108	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1107	1161-ADMN-1114

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. Appropriate Technical Manuals

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**1161-MANT-2333:** Repair a Large Remote Air Conditioner Skid Mounting Assembly

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With personal protective equipment (PPE), tools, power source, equipment records, forms, repair parts (if needed) and references.

**STANDARD:** To ensure the equipment is returned to an operational condition per the reference.

**PERFORMANCE STEPS:**

1. Review the reference
2. Review the diagnosis of the fault
3. Replace/ adjust/ connect/ service faulty parts (as required)
4. Test the repairs
5. Document repairs

**PREREQUISITE EVENTS:**

1161-MANT-1202	1161-MANT-1206	1161-MANT-1207
1161-MANT-1204	1161-ADMN-1114	1161-ADMN-1105
1161-ADMN-1104	1161-ADMN-1107	1161-ADMN-1108

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. Appropriate Technical Manuals

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**1161-MANT-2401:** Supervise equipment preventive maintenance

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Section Leader, Utilities Chief

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, maintenance personnel with tools and repair parts, and references.

**STANDARD:** To ensure all required preventive maintenance is performed and deficiencies recorded per the reference.

**PERFORMANCE STEPS:**

1. Review the technical manuals for the air conditioning equipment receiving preventive maintenance.
2. Brief maintenance personnel on preventive maintenance to be performed, answer questions, and discuss safety precautions.
3. Observe the preventive maintenance, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure documentation of maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1103	1161-XENG-1503	1161-MANT-1211
1161-ADMN-1111	1161-ADMN-1114	1161-ADMN-1112
1161-ADMN-1105	1161-ADMN-1104	1161-ADMN-1107
1161-ADMN-1108	1161-ADMN-1113	

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

---

**1161-MANT-2402:** Supervise equipment corrective maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, maintenance personnel with tools and repair parts, and references.

**STANDARD:** To ensure that all required corrective maintenance services are performed and deficiencies recorded per the reference.

**PERFORMANCE STEPS:**

1. Review the technical manuals for the refrigeration/ air conditioning equipment receiving corrective maintenance.
2. Brief maintenance personnel on corrective maintenance to be performed, answer questions, and discuss safety precautions.
3. Observe the corrective maintenance, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure documentation of maintenance performed.

**PREREQUISITE EVENTS:**

1161-ADMN-1103	1161-ADMN-1108	1161-MANT-1201
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1161-MANT-1205	1161-MANT-1202	1161-MANT-1206
1161-MANT-1216	1161-MANT-1224	1161-MANT-1222
1161-ADMN-1111	1161-MANT-1207	1161-MANT-1203
1161-MANT-1204	1161-ADMN-1114	1161-ADMN-1113
1161-ADMN-1105	1161-ADMN-1104	1161-ADMN-1107
1161-XENG-1503		

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1161-XENG-2507:** Operate a MEP-805B 30kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided generator set, tools, and references.

**STANDARD:** To ensure generator operates normally, safely, and equipment is not damaged by the operation IAW the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the generator.
5. Perform operation checks.
6. Turn off generator.

**PREREQUISITE EVENTS:**

1161-ADMN-1103	1161-ADMN-1104	1161-ADMN-1105
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**REFERENCES:**

1. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Provided generator set.

**MATERIAL:** Provided proper POL.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Personnel must obtain a generator license.

---

**1161-XENG-2508:** Operate a 9,000 BTU 60Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2509:** Operate an 18,000 BTU 60/400Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.

5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, Bay area

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2510:** Operate an 18,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2511:** Operate an 18,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2512:** Operate a 36,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.



5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2513:** Operate a 36,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2514:** Operate a 60,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2515:** Operate a 54,000 BTU 400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.

5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2516:** Operate a 9,000 BTU 60Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2517:** Operate a 54,000 BTU 60Hz Horizontal Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

---

**1161-XENG-2518:** Operate an 18,000 BTU 60/400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.

5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-2519:** Operate a 36,000 BTU 60/400Hz Vertical Air Conditioner

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-2520:** Operate a Unit Operations Center GETT trailer environmental control unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tools, power source and references.

**STANDARD:** To ensure normal and safe operation in accordance with references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Connect the ECU to a power source.
3. Perform pre-operation checks.
4. Start the ECU.
5. Perform operation checks.
6. Turn off ECU.

**PREREQUISITE EVENTS:**

1161-ADMN-1103

**REFERENCES:**

1. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
2. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
3. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Environmental Control Unit, power source.

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**1161-XENG-2521:** Direct air conditioning equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, a camp layout, air conditioning equipment, installation crew with tools, and reference.

**STANDARD:** To ensure safe and proper installation per the reference.

**PERFORMANCE STEPS:**

1. Review the mission, camp layout, and the technical manuals for the air conditioning equipment being installed.

2. Brief installation crew, answer questions, make assignments, and discuss safety precautions.
3. Observe the installation process, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure that air conditioning equipment is installed on time.

**PREREQUISITE EVENTS:**

1161-XENG-1503                      1161-ADMN-1103

**REFERENCES:**

1. TM 10673A-12-2 ERU TM Manual
  2. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
  3. TM 11084A-OI Air Conditioner, 5 Ton, 60,000
  4. TM 9-4120-371-14 18,000 BTU Air Conditioner
  5. TM 9-4120-389-14 36,000 BTU Air Conditioner
  6. TM 9-4120-393-14 60,000 BTU Air Conditioner
  7. Appropriate Equipment Manual
- 

**1161-XENG-2522:** Direct refrigeration equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, a camp layout, refrigeration equipment, installation crew with tools, and reference.

**STANDARD:** To ensure safe and proper installation per the reference.

**PERFORMANCE STEPS:**

1. Review the mission, camp layout, and the technical manuals for the refrigeration equipment being installed.
2. Brief installation crew, answer questions, make assignments, and discuss safety precautions.
3. Observe the installation process, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure that refrigeration equipment is installed on time.

**PREREQUISITE EVENTS:**

1161-XENG-1506                      1161-ADMN-1103

**REFERENCES:**

1. TM 10673A-12-2 ERU TM Manual
-

**1161-XENG-2523:** Direct air conditioning equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, a camp layout, air conditioning equipment, installation crew with tools, and reference.

**STANDARD:** To ensure that air conditioning equipment will operate normally and safely per the reference.

**PERFORMANCE STEPS:**

1. Review the mission, camp layout, and the technical manuals for the air conditioning equipment being operated.
2. Brief operation crew, answer questions, make assignments, and discuss safety precautions.
3. Observe the operation process, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure that air conditioning equipment is operated safely.

**PREREQUISITE EVENTS:**

1161-ADMN-1103	1161-XENG-1503	1161-MANT-1211
1161-ADMN-1104	1161-ADMN-1114	1161-ADMN-1113
1161-ADMN-1105	1161-ADMN-1111	

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**1161-XENG-2524:** Direct refrigeration equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, a camp layout, refrigeration equipment, installation crew with tools, and reference.

**STANDARD:** To ensure that air conditioning equipment will operate normally and safely per the reference.

**PERFORMANCE STEPS:**

1. Review the mission, camp layout, and the technical manuals for the refrigeration equipment being operated.
2. Brief operation crew, answer questions, make assignments, and discuss safety precautions.



3. Observe the operation process, correct deficiencies, and provide guidance in proper procedures.
4. Ensure that safety rules are observed, correct violations, and identify and correct unsafe situations.
5. Ensure that refrigeration equipment is operated safely.

**PREREQUISITE EVENTS:**

1161-ADMN-1114	1161-ADMN-1113	1161-ADMN-1105
1161-ADMN-1111	1161-ADMN-1103	1161-XENG-1506
1161-MANT-1214	1161-ADMN-1104	

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1161-XENG-2601:** Install an interior heating, ventilation and air conditioning (HVAC) system in a permanent structure

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a structure, construction blueprints, a tools, a bill of materials (BOM), all materials listed on the BOM, and references.

**STANDARD:** So that the structure will have HVAC per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the blueprints.
2. Review applicable section(s) of the reference.
3. Run ducts.
4. Install HVAC equipment.
5. Run electrical wiring.
6. Charge the system with refrigerant.
7. Test the system.

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA certification.

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**1161-XENG-2602:** Repair the interior heating, ventilation and air conditioning (HVAC) system of a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a structure, tools, repair parts, and the references.

**STANDARD:** So that the HVAC system operates safely to the equipment specifications.

**PERFORMANCE STEPS:**

1. Review the equipment manuals/specifications.
2. Determine if the malfunction is electrical or mechanical.
3. Identify the faulty component.
4. Determine if component fault was not caused by a defect elsewhere.
5. Repeat steps 2-4 as required.
6. Replace/adjust/connect/service faulty parts (as required).
7. Test the repairs.

**REFERENCES:**

1. Appropriate Technical Manuals
2. National Electrical Code

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA certification.

---

**1161-XENG-2603:** Inspect the interior heating, ventilation and air conditioning (HVAC) system of a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an operational plan, a structure containing a HVAC system, tools, and the references.

**STANDARD:** So that the ability of the HVAC system to support the structure and mission are determined, safety concerns are addressed, and required repairs/upgrades are identified.

**PERFORMANCE STEPS:**

1. Review operational plan and references.

2. Find and determine capabilities/serviceability of ducts and vents, recording findings.
3. Find and determine capabilities/serviceability of HVAC system electrical wiring, recording findings.
4. Determine size of structure and BTU/Tons required to condition the air, recording findings.
5. Identify any part of the HVAC system that fails to comply with mission requirements.
6. Analyze findings.
7. List all discrepancies identified, specifying any corrective action(s) required.

**REFERENCES:**

1. Appropriate Technical Manuals
2. National Electrical Code

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must have required EPA certifications.

---

**1161-XENG-2604:** Design an interior heating, ventilation and air conditioning (HVAC) system for a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a structure and references.

**STANDARD:** To meet the requirements of the structure based on local environment and structures purpose.

**PERFORMANCE STEPS:**

1. Review the construction plans and references.
2. Determine total space of structure.
3. Determine BTU/tons of air to be conditioned/moved.
4. Size HVAC units required.
5. Plot the placement of HVAC units on construction plans.
6. Ensure the HVAC system conforms to the building's requirements.
7. Plot ducts and vents on construction plans.
8. Determine number of personnel required to safely install system.
9. Establish a Bill of Materials (BOM), including safety items.
10. Establish a Course of Action (COA).

**REFERENCES:**

1. Appropriate Technical Manuals
  2. National Electrical Code
-

**1161-XENG-2605:** Direct interior heating, ventilation and air conditioning (HVAC) system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, construction blueprints, tools, a bill of materials (BOM), all materials listed on the BOM, and the references.

**STANDARD:** So that the HVAC system will be installed in the structure per the construction blueprints and the installation will be completed safely and on time per the COA.

**PERFORMANCE STEPS:**

1. Review the blueprints.
2. Inventory the BOM.
3. Brief installation crew.
4. Direct installation crew.
5. Conduct final inspection of installed HVAC system.

**REFERENCES:**

1. Appropriate Technical Manuals
  2. National Electrical Code
- 

**1161-XENG-2606:** Direct interior heating, ventilation and air conditioning (HVAC) system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring HVAC system repairs, personnel, tools, materials, and the references.

**STANDARD:** Ensuring compliance with EPA regulations per the references.

**PERFORMANCE STEPS:**

1. Examine the HVAC system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Direct repairs.
6. Conduct inspection of repaired HVAC system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
2. TM 9406-15 Grounding Procedures

---

**1161-XENG-2607:** Assist in camouflaging equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote site with equipment.

**STANDARD:** So that site detection is avoided by routine enemy surveillance.

**PERFORMANCE STEPS:**

1. Determine threats.
2. Identify critical equipment.
3. Identify availability of natural cover and concealment.
4. Select camouflage materials and techniques.
5. Install decoys.
6. Space equipment irregularly (in length and depth).
7. Cover equipment with nets and other materials that blend with background.
8. Inspect camouflaging, from different angles, for ease of detection.

**REFERENCES:**

1. FM 20-3 Camouflage

---

**1161-XENG-2608:** Determine maintenance contact team Refrigeration and Air Conditioning Technician support requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a requirement to provide maintenance/repairs of refrigeration/air conditioning equipment at a forward location.

**STANDARD:** So that the equipment is efficiently and effectively repaired.

**PERFORMANCE STEPS:**

1. Review the requirements.
2. Determine numbers of equipment requiring maintenance/repair.
3. Determine numbers of personnel required to support the quantity of

- equipment.
4. Review equipment technical manual to determine repair parts requirements.
  5. Assemble parts block
  6. Assign personnel.

**REFERENCES :**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. Appropriate Technical Manuals
- 

**1161-XENG-2609:** Develop a rear area security plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Refrigeration and Air Conditioning Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote equipment site and given a scenario.

**STANDARD:** To provide physical security from enemy threats for both personnel and equipment.

**PERFORMANCE STEPS:**

1. Assess the site for avenues of approach.
2. Determine how to limit the number of avenues of approach.
3. Determine the location of security check points.
4. Determine lanes of fire.

**REFERENCES :**

1. MCRP 5-12.1C Risk Management (Feb 01)
  2. MCWP 3-41.1 Rear Area Operations
-

ENG & UTIL T&R MANUAL

CHAPTER 8

MOS 1169 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 8

MOS 1169 INDIVIDUAL EVENTS

**8000. PURPOSE.** This chapter includes all individual training events for the Utilities Chief. An individual event is an event that a trained Utilities Chief would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**8001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4 character identifier. The first four characters represent the MOS (1169).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
MANT - Maintenance  
ADMN - Administration

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Utilities Chief individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**8002. INDIVIDUAL CORE CAPABILITIES 1169**

1. UTILITIES CHIEF 1169 - Career Progression Philosophy

Utilities Chiefs serve in the battalions and squadrons of the divisions, air wings and Marine Logistics Groups as well as the Marine Corps Engineer School and Marine Corps Systems Command. The tour length for all ranks is 24 months. The order in which a Utilities Chief moves through the Engineer Community is as follows:

- a. Possess experience in either MOS 1141, 1142, 1161, or 1171.
- b. Utilities Chiefs are trained at Utilities Instruction Company, Marine Corps Engineer School, Camp Lejeune, NC.



c. GySgts serve at the battalions and squadrons of the divisions, air wings and Marine Logistics Groups, Marine Corps Engineer School and Marine Corps Systems Command.

d. MSgts serve at the battalions and squadrons of the divisions, air wings and Marine Logistics Groups, Marine Corps Engineer School and Marine Corps Systems Command.

e. MGySgts serve at engineer support battalions, Marine logistics groups, Marine Expeditionary Forces and Marine Forces Atlantic/Pacific, Marine Corps Engineer School and Marine Corps Systems Command.

2. Billet Description. Utilities chiefs are responsible for supervising all personnel within the utilities OccFld and for managing utilities projects. This MOS will be assigned only by the authority of the CMC (MM).

#### MISSION OF UTILITIES CHIEF

Utilities chiefs are technical advisers to the commander at all levels of all elements of the various MAGTFs on the employment of utilities support. These staff noncommissioned officers analyze, translate, and execute commanders' operational requirements into a utilities support reality that enhances mission accomplishment. They plan and supervise the establishment, operation, and maintenance of water filtration/purification, storage, and distribution sites; electric power generating sites along with the inherent underground, above ground, and overhead electric power distribution systems; and shower and laundry services. They coordinate and supervise the installation, maintenance and repair of heating, air conditioning (to include automotive), and refrigeration equipment; and the maintenance and repair of the electrical systems on engineer and general supply equipment. Water quality assurance, field sanitation, sewage, and waste disposal is also planned, coordinated, and supervised. When deployed in support of Military Operations Other Than War (MOOTW), these chiefs also plan, and coordinate the installation and repair of plumbing and indoor electrical wiring. This MOS is technical in nature and requires years of experience to become proficient. Due to the diversity of commands throughout the Marine Corps, some of the duties and tasks performed by the Utilities Chief may overlap with those of the Engineer Equipment Chief, Motor Transport Maintenance Chief, and Motor Transport Operations Chief. Additional duties may include: Formal schools faculty, safety management, new equipment/systems research and development, and new systems acquisition. This MOS will be assigned only by the authority of the CMC (MM).

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Utilities Chief. The following core skills are identified for MOS 1169:

- Supervise shop operations.
- Plan utilities operations.
- Supervise utilities operations.
- Supervise utilities personnel.
- Supervise utilities equipment operations.
- Supervise utilities maintenance.

4. Billet Applicability. The basic duties and core skills for the 1169 MOS are the same throughout the operating forces.

**8003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**8004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1169-ADMN-1101:** Manage Operational Risk (ORM)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Given the inherent dangers involved in working around equipment, electricity and water, effort must be made to ensure risks are reduced or eliminated by supervising the implementation of controls.

**BILLETS:** Maintenance Chief, Operations Chief, Section Head, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** Task/mission effectiveness is increased while loss of personnel and materiel is minimized through the implementation of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Supervise implementation of controls.
8. Periodically review task/mission, hazards and controls.

**REFERENCES:**

1. DODI 6055.1 DoD Safety and Occupational Health (SOH) Program (Aug 98)
2. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
3. MCRP 5-12.1C Risk Management (Feb 01)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Risk Management Worksheet

---

**1169-ADMN-1102:** Administer a Lockout/Tagout program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Equipment Lockout/Tagout ensures personnel are protected from injury during any servicing or maintenance done on machinery or equipment, where the unexpected energizing, start-up, or release of any type of energy (e.g., steam, electricity, hydraulic, pneumatic, and gravity) could occur.

**BILLETS:** Maintenance Chief, Section Head, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** In a shop setting, with personnel, equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** Prior to personnel performing maintenance, service, repair, or modification to equipment, the equipment shall be locked out or tagged out to protect against accidental or inadvertent start-up, or operation that may cause injury to personnel.

**PERFORMANCE STEPS:**

1. Review references.
2. Evaluate Lockout/Tagout Program using NAVMC 11402 (annual requirement).
3. Ensure availability of an ample supply of locks and tags.
4. Review/approve Lockout/Tagout Checklists, NAVMC 11403.
5. Maintain Lockout/Tagout Log, NAVMC 11404.
6. Control the issue of Lockout/Tagout devices to authorized workers.
7. Ensure the timely return of Lockout/Tagout devices.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11402 - Lockout/Tagout Program Evaluation; NAVMC 11403 - Lockout/Tagout Checklist; NAVMC 11404 - Lockout/Tagout Log.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed instructions for this event.

---

**1169-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Working around equipment that generates electricity dramatically increases the possibility of electrocution. The ability to safely recover an electric shock victim will save lives.

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with victim until medical help arrives.
8. Report the incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 09406-15 Grounding Procedures for Electromagnetic Interference
- 

**1169-ADMN-1104:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authority.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. Local SOP Local Standard Operating Procedures
  2. MCO 4450.12 Storage and Handling of Hazardous Materials
  3. MCO P4790.2C MIMMS Field Manual
  4. MCO P5090.2A Environmental Compliance and Protection Manual
  5. MCRP 4-11B Environmental Considerations in Military Operations
- 

**1169-ADMN-1105:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify type of first aid required (review MSDS).
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1169-ADMN-1106:** Brief electrical safety to end users

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operation order, a field electrical power generation and distribution system plan, personnel using the system, and references.

**STANDARD:** So that the location of "off limits" areas, meaning of warning signs, prohibited electrical equipment and reasons, emergency procedures, and unsafe conditions are identified per the reference.

**PERFORMANCE STEPS:**

1. Review the operation order.
2. Review system plan.
3. Review applicable section(s) of the references.
4. Determine training requirements.
5. Deliver the training to applicable personnel.
6. Evaluate training.

**REFERENCES:**

1. FM 20-31 Electric Power Generation in the Field
  2. National Electrical Code
- 

**1169-ADMN-1107:** Monitor safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With resources and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.
6. Conduct safety awareness training.
7. Evaluate safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES:**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
2. FM 100-14 Risk Management
3. FM 5-424 Theater of Operations Electrical Systems
4. MCO 3500.27B Operational Risk Management
5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
6. MCO 5100.29 Marine Corps Safety Program
7. MCO 5100.30A Marine Corps Off-Duty And Recreation Safety Program
8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
9. MCO 5104.3 Marine Corps Radiation Safety Program
10. MCO P4790.2 MIMMS Field Procedures Manual
11. MCO P5090.2A Environmental Compliance and Protection Manual
12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
15. UNIT SOP Unit's Standing Operating Procedures
16. National Electrical Code
17. National Plumbing Code

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**1169-ADMN-1108:** Monitor environmental regulations compliance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With resources and references.

**STANDARD:** To ensure environmental policies and procedures are adhere to per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Inspect the unit compliance with applicable environmental regulations and restrictions.
3. Enforce environmental regulations.
4. Manage unit hazardous waste/material disposal program.
5. Maintain hazardous materials storage areas.
6. Maintain Material Safety Data Sheets (MSDS).
7. Report any situations that require reporting.
8. Conduct environmental regulations compliance planning for unit field operations.
9. Provide input for unit SOPs and environmental impact statements.

**REFERENCES:**

1. Local SOP Local Standard Operating Procedures
  2. MCO 10330.2 Storage/Handling of Compressed Gases
  3. MCO 4450.12 Storage and Handling of Hazardous Materials
  4. MCO 5090.1\_ Chlorofluorocarbons (CFCs) and Halons
  5. MCO P4790.2 MIMMS Field Procedures Manual
  6. MCO P5090.2A Environmental Compliance and Protection Manual
- 

**1169-ADMN-1109:** Direct Military Occupational Specialty (MOS) training program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With training resources, records, and references.

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aids/materials as required.
8. Schedule MOS sustainment training.
9. Ensure MOS training is conducted.
10. Maintain lesson plans.
11. Document MOS training.

12. Encourage use of self-directed study and assist in providing resources.
13. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System
  2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  3. MCO 1553.1 The Marine Corps Training and Education System
  4. MCO 1553.3A USMC Unit Training Management Guide
  5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
  6. MCO 3501.7A MCCRES
  7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. MCRP 3-0 A Unit Training Management Guide
  10. MCRP 3-0B How to Conduct Training
  11. UNIT SOP Unit's Standing Operating Procedures
  12. Systems Approach to Training (SAT) Manual
- 

**1169-ADMN-1110:** Administer equipment operator licensing program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With personnel, supporting documentation, and references.

**STANDARD:** Ensuring licensed operators are available to operate the unit's equipment per the references.

**PERFORMANCE STEPS:**

1. Determine licensing requirements.
2. Establish a unit licensing program.
3. Monitor licensing program.

**REFERENCES:**

1. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
  4. UNIT SOP Unit's Standing Operating Procedures
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**1169-ADMN-1111:** Control publications

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With access to Publications Library Management System (PLMS), Marine Corps Publications Distribution System (MCPDS), Marine Corps Publications website, unit Publications Listing (PL), and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review Publications Listing.
2. Validate Publications Listing.
3. Identify requirements based on the mission and TO/E.
4. Evaluate control procedures.
5. Evaluate NAVMC 10772 procedures.
6. Ensure deficiencies are corrected.

**REFERENCES:**

1. MCBUL 5600 Series
  2. MCO 5215.1 Marine Corps Directives Management Program
  3. MCO 5600.20 Marine Corps Warfighting Publications System
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4790.2C MIMMS Field Manual
  6. MCO P5215.17 USMC Technical Publications System
  7. MCO P5600.31G Marine Corps Publications and Printing Regulations
  8. NAVMC 2761 Catalog of Publications
  9. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  10. TM 11275-15/3C Characteristics of Engineering Equipment
  11. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  12. UM MCPDS Marine Corps Publications Distribution System Users Manual
  13. UM-PLMS Publications Library Management System
  14. Local Standard Operating Procedures (SOP)
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**1169-ADMN-1112:** Direct equipment SL-3 inventories

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, assemblies, chest, sets, kits, personnel, and references,

**STANDARD:** so that serviceability of equipment is maintained per the references.

**PERFORMANCE STEPS:**

1. Review item inventory requirements.
2. Schedule inventories.

3. Brief Inventory teams.
4. Monitor inventories.
5. Ensure that inventories are documented.
6. Ensure deficiencies are requisitioned/acquired.

**REFERENCES :**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2C MIMMS Field Manual
  3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UNIT SOP Unit's Standing Operating Procedures
- 

**1169-ADMN-1113:** Supervise supply support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With maintenance, supply and fiscal reports, and references.

**STANDARD:** So that section readiness is maintained per the references.

**PERFORMANCE STEPS:**

1. Coordinate supply support requirements with the unit supply section.
2. Provide input for field budget requirements.
3. Supervise execution of allocated funding.
4. Determine maintenance requirements.
5. Determine supply requirements.
6. Determine fuel requirements.
7. Supervise shop/section PEB and repair order layette procedures.
8. Ensure parts, supplies, and fuel are obtained.
9. Supervise shop/section validation/reconciliation procedures.

**REFERENCES :**

1. MCO 4400-16G UMMIPS
  2. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  3. MCO 4400.192\_ Logistics Management Information System
  4. MCO 7510.5 USMC Fraud, Waste & Abuse Oversight Awareness
  5. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  6. MCO P4400.82 MIMMS Controlled Item Management Manual
  7. MCO P4790.2 MIMMS Field Procedures Manual
  8. MCO P7100.8 Field Budget Guidance Manual
  9. TM 4700-15/1H Ground Equipment Record Procedures
  10. UM 4400-124 FMF SASSY Using Unit Procedures
  11. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  12. UNIT SOP Unit's Standing Operating Procedures
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**1169-ADMN-1114:** Manage equipment records

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, records, forms, and references.

**STANDARD:** So that section readiness can be determined per the references.

**PERFORMANCE STEPS:**

1. Identify records requirements.
2. Manage records.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
4. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
5. MCO 5210.11E Records Management Program for the Marine Corps
6. MCO 5213.7 Marine Corps Forms Management Program
7. MCO P3000.13 Marine Corps Status of Resources and Training System (SORTS)
8. MCO P4790.2 MIMMS Field Procedures Manual
9. MCO P4790\_1B MIMMS INTRO MANUAL
10. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
11. TM 4700-15/1H Ground Equipment Record Procedures
12. UM 4400-120 Asset Tracking for Logistics Supply System Manual
13. UM 4400-123 FMF SASSY Management Unit Procedures
14. UM 4400-124 FMF SASSY Using Unit Procedures
15. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
16. UNIT SOP Unit's Standing Operating Procedures

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**1169-ADMN-1115:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
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**1169-ADMN-1116:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a defective item and references.

**STANDARD:** So that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
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**1169-ADMN-1117:** Supervise equipment availability

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment records, reports, and references.

**STANDARD:** To support the mission per the references.

**PERFORMANCE STEPS:**

1. Identify shortages/excesses.
2. Review readiness.
3. Review priority designator assignments.
4. Review maintenance cycle time.
5. Develop a plan to increase equipment availability.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4400-16G UMMIPS
  4. MCO P3000.13 Marine Corps Status of Resources and Training System (SORTS)
  5. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  6. MCO P4790.2 MIMMS Field Procedures Manual
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
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**1169-ADMN-1118:** Brief utilities support plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, site survey, camp layout, and references.

**STANDARD:** So that command is aware of the utilities situation per the references.

**PERFORMANCE STEPS:**

1. Gather briefing materials.
2. Determine briefing requirements.
3. Present the information.
4. Answer questions as required.

**REFERENCES:**

1. FM 5-0 Military Briefing
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**1169-ADMN-1119:** Place new equipment in service

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Users Logistics Support Summary (ULSS) or Fielding Plan (FP), and references.

**STANDARD:** So that equipment is supported by maintainers and operators per the references.

**PERFORMANCE STEPS:**

1. Review the equipment's Users Logistics Support Summary (ULSS) or Fielding Plan (FP).
2. Establish a training plan for the new equipment.
3. Determine licensing requirements.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. UNIT SOP Unit's Standing Operating Procedures
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**1169-MANT-1201:** Validate maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** To ensure accurate knowledge of the maintenance situation per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY Transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly Material Report.
8. Monitor Weekly LM2 Report.
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting

3. MCO 4400-16G UMMIPS
4. MCO P4790.2 MIMMS Field Procedures Manual
5. TM 4700-15/1H Ground Equipment Record Procedures
6. UM 4400-124 FMF SASSY Using Unit Procedures
7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
8. UNIT SOP Unit's Standing Operating Procedures

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**1169-MANT-1202:** Monitor maintenance related programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment and references.

**STANDARD:** To ensure equipment serviceability per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance related programs.
2. Inspect equipment.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Direct Modification Control program.
6. Direct Calibration Control program.
7. Direct New Equipment Warranty program.
8. Direct Joint Oil Analysis Program (JOAP).
9. Direct Replacement Evacuation (R&E) program.
10. Direct Quality Deficiency (QDR) program.
11. Direct Recoverable Items (WIR) program.
12. Direct Quality Control (QC) program.
13. Direct Corrosion Prevention and Control (CPAC) program.
14. Ensure records are updated.

**REFERENCES:**

1. MCO 4105.2 Marine Corps Warranty Program
2. MCO 4400.194 Class VII Stock Rotation Program
3. MCO 4731.1 Oil Analysis Program for Ground Equipment
4. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
5. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
6. MCO P4400.150E Marine Corps Consumer Level Policy Manual
7. MCO P4400.82 MIMMS Controlled Item Management Manual
8. MCO P4790.2 MIMMS Field Procedures Manual
9. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
10. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
11. TI-4731-14/1C MC Joint Oil Analysis Program
12. TM 4700-15/1H Ground Equipment Record Procedures

13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
14. UNIT SOP Unit's Standing Operating Procedures

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**1169-XENG-1501:** Plan interior electrical wiring system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of electrical fixtures/appliances to be installed, local code requirements, and references.

**STANDARD:** Per the NEC (NFPA 70).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review list of electrical fixtures/appliances to be installed.
3. Calculate general lighting load.
4. Identify power requirements.
5. Determine code requirements.
6. Size branch circuits.
7. Size over current protection devices.
8. Plot electrical symbols on construction plans.
9. Ensure that the interior electrical wiring system plan conforms to the references and the building's requirements.
10. Determine number of personnel required to install system.
11. Establish a Bill of Materials (BOM), including safety items.
12. Establish a Course of Action (COA).

**REFERENCES:**

1. TM 9406-15 Grounding Procedures
2. National Electrical Code

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**1169-XENG-1502:** Plan interior heating, ventilation and air conditioning (HVAC) system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of heating, ventilation and air conditioning criteria for the building, local code requirements, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review HVAC criteria.
3. Calculate volume of air to be conditioned.
4. Determine insulation characteristics.
5. Identify tons of air to be conditioned per hour.
6. Determine code requirements.
7. Determine vent and ducting requirements.
8. Plot HVAC system on construction plans.
9. Ensure that the HVAC system plan conforms to the references and the building's requirements.
10. Determine number of personnel required to install system.
11. Establish a Bill of Materials (BOM), including safety items.
12. Establish a Course of Action (COA).

**REFERENCES:**

1. FM 5-553 General Drafting
  2. TM 5-704 Construction Print Reading in the Field
  3. TM 9406-15 Grounding Procedures
  4. National Electrical Code
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**1169-XENG-1503:** Plan interior plumbing system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of plumbing fixtures to be installed, local code requirements, and references.

**STANDARD:** Per the Uniform Plumbing Code (UPC).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review list of plumbing fixtures/appliances to be installed.
3. Identify plumbing symbols.
4. Determine code requirements.
5. Identify water supply requirements.
6. Identify waste requirements.
7. Identify vent requirements.
8. Plot plumbing system/fixtures on construction plans.
9. Ensure that the interior plumbing system plan conforms to the references and the building's requirements.
10. Identify safety concerns.
11. Determine number of personnel required to install system.
12. Establish a Bill of Materials (BOM), including safety items.
13. Establish a Course of Action (COA).

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
2. FM 5-163 Sewerage
3. FM 5-553 General Drafting
4. TM 5-704 Construction Print Reading in the Field
5. TM 9406-15 Grounding Procedures
6. National Plumbing Code

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**1169-XENG-1601:** Conduct a utilities site survey

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a map, warning order, grid coordinates, compass, personnel, blank Water Reconnaissance Reports (DA 1712R), and references.

**STANDARD:** To support the unit mission per the warning order and references.

**PERFORMANCE STEPS:**

1. Review map, warning order, and references.
2. Brief personnel.
3. Conduct survey.
4. Evaluate site for safety concerns.
5. Evaluate site for environmental concerns.
6. Ensure that site conditions are evaluated and recorded on Water Reconnaissance Reports (DA 1712R).
7. Evaluate alternate water sources.
8. Evaluate site for camouflage, concealment, and decoys.
9. Evaluate site for Rear Area Security concerns.
10. Develop Site Survey Report.
11. Brief Site Survey to those concerned.
12. Provide input for the camp layout.
13. Provide input for the engineer portions of operation orders.

**REFERENCES:**

1. MCO P3000.18 Marine Corps Planner's Manual
2. MCRP 5-12.1C Risk Management (Feb 01)
3. MCWP 5-1 Marine Corps Planning Process

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**1169-XENG-1602:** Plan field water purification/storage/distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, area map, site survey, completed Water Reconnaissance Repots (DA 1712R), camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, area map, site survey, Water Reconnaissance Reports, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Develop layout of water purification/storage/distribution system.
5. Design a plan for the installation and operation of field water purification/storage/distribution system.
6. Determine logistical/materiel requirements.
7. Analyze plan for changes.
8. Draw plan over area map/camp layout.
9. Brief plan to those concerned.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
  2. FM 10-52 Water Supply in Theaters of Operation
  3. FM 10-52-1 Water Supply Point Equipment and Operations
  4. FMFRP 0-55 Desert Water Supply
  5. NAVMED P-5010 Navy Sanitation
  6. TM 09406-15 Grounding Procedures for Electromagnetic Interference
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**1169-XENG-1603:** Plan field hygiene equipment support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Develop camp layout of hygiene equipment.
5. Design a plan for the installation and operation of field hygiene equipment.
6. Determine logistical/materiel requirements.

7. Analyze plan for changes.
8. Draw plan over camp layout.
9. Brief plan to those concerned.

**REFERENCES :**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 09406-15 Grounding Procedures for Electromagnetic Interference
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**1169-XENG-1604:** Plan field refrigeration/air conditioning equipment support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Develop camp layout of refrigeration/air conditioning equipment.
5. Design a plan for the installation and operation of field refrigeration/air conditioning equipment.
6. Determine logistical/materiel requirements.
7. Analyze plan for changes.
8. Draw plan over camp layout.
9. Brief plan to those concerned.

**REFERENCES :**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
  2. MCO 10110.34E USMC Food Service and Subsistence Program
  3. NAVMED P-5010 Navy Sanitation
  4. NAVSUP P-421 Navy Food Service SOP
  5. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  6. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
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**1169-XENG-1605:** Plan field electrical power generation/distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, site survey, and camp layout.
2. Determine safety requirements.
3. Determine environmental requirements.
4. Design a plan for the installation and operation of a field electrical power generation/distribution system.
5. Ensure loads are balanced.
6. Determine logistical/materiel requirements.
7. Analyze plan for changes.
8. Draw plan over camp layout.
9. Brief plan to those concerned.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 9406-15 Grounding Procedures
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**1169-XENG-1606:** Plan camp sanitation system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Order, environmental impact report, area map, site survey, camp layout, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, site survey, camp layout, and references.



2. Determine safety requirements.
3. Determine environmental requirements.
4. Identify quantity and types of grease traps, head/latrines, garbage pits, and soakage pits.
5. Develop layout of sanitation system components.
6. Design a plan for the installation and operation of field sanitation system.
7. Establish clearing/inspection schedule to include preventive medicine.
8. Determine logistical/material requirements.
9. Analyze plan for changes.
10. Draw plan over area map/camp layout.
11. Brief plan to those concerned to include preventive medicine.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation

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**1169-XENG-1607:** Monitor water test equipment measurements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With water test equipment and references.

**STANDARD:** To ensure only potable water is consumed by the unit per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Test the water.
3. Take necessary actions to improve product water quality.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
2. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
3. TM 10-6630-222-12&P Water Quality Analysis Set-Purification

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**1169-XENG-1608:** Monitor ground test set measurements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a ground test set and references.

**STANDARD:** To ensure safety of equipment and personnel per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Test the ground.
3. Take necessary actions to improve ground.

**REFERENCES:**

1. TM 09406-15 Grounding Procedures for Electromagnetic Interference
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**8004. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1169-ADMN-2120:** Monitor equipment embarkation requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, unit MAFTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAFTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES) reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references.

**STANDARD:** To support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAFTG II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Brief personnel.
7. Ensure equipment is marked for transportation/embarkation to include LOGMARS labels.
8. Ensure equipment is disassembled, stowed, packed, and/or prepared for transportation/embarkation.
9. Coordinate with unit embark chief to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
  2. FM 101-10-1\_ Organizational, Technical and Logistical Data
  3. FM 55-15 Transportation Reference Data
  4. FM 55-9 Unit Air Movement Planning
  5. FMFM 3-1 Command and Staff Action
  6. FMFM 4-6 Movement of Units in Air Force Aircraft
  7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
  8. MCO 4610.35 USMC Equipment Characteristics File
  9. MCO P3000.18 Marine Corps Planner's Manual
  10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  11. MCO P4600.7\_ USMC Transportation Manual
  12. MCWP 3-31.5 Ship-to-Shore Movement
  13. MCWP 4-11.3 Transportation Operations
  14. TM 4700-15/1H Ground Equipment Record Procedures
  15. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and
  16. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material
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**1169-MANT-2303:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources and references.

**STANDARD:** To ensure maintenance priorities support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1169-MANT-2304:** Supervise preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment preventive maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Determine maintenance priorities.
6. Develop preventive maintenance schedule.
7. Supervise equipment preventive maintenance program.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE)

- Calibration and Maintenance Program (CAMP)
2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
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**1169-MANT-2305:** Supervise corrective maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment corrective maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Determine maintenance priorities.
6. Supervise equipment corrective maintenance procedures.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
  7. Appropriate Technical Manuals
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**1169-MANT-2306:** Supervise field maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section SNCOIC, Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, camp layout, equipment, resources, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, camp layout, and references.
2. Plan field maintenance.
3. Determine safety/environmental considerations.
4. Establish field maintenance facility.
5. Establish guidelines for field maintenance facility operation.
6. Supervise equipment maintenance.
7. Supervise records maintenance.
8. Recover field maintenance facility.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  4. UNIT SOP Unit's Standing Operating Procedures
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**1169-XENG-2504:** Supervise interior electrical wiring system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, electrical plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, electrical plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed wiring system.

**REFERENCES:**

1. FM 5-553 General Drafting
  2. TM 5-704 Construction Print Reading in the Field
  3. TM 9406-15 Grounding Procedures
  4. National Electrical Code
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**1169-XENG-2505:** Supervise interior heating, ventilation and air conditioning (HVAC) system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, HVAC plan, personnel, tools, bill of material, materials, and references,

**STANDARD:** to support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, HVAC plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed HVAC system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-553 General Drafting
  3. TM 5-704 Construction Print Reading in the Field
  4. TM 9406-15 Grounding Procedures
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**1169-XENG-2506:** Supervise interior plumbing system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, plumbing plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, plumbing plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Manage installation crew.
6. Conduct final inspection of installed plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
2. FM 5-163 Sewerage
3. FM 5-553 General Drafting
4. TM 5-704 Construction Print Reading in the Field
5. TM 9406-15 Grounding Procedures
6. National Plumbing Code

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**1169-XENG-2507:** Supervise interior electrical wiring system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring interior electrical wiring system repairs, personnel, tools, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the interior electrical wiring system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired wiring system.

**REFERENCES:**

1. TM 9406-15 Grounding Procedures
2. National Electrical Code

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**1169-XENG-2508:** Supervise interior heating, ventilation and air conditioning (HVAC) system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring HVAC system repairs, personnel, tools, materials, and the references.

**STANDARD:** To support unit mission per the references.



**PERFORMANCE STEPS:**

1. Examine the HVAC system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired HVAC system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. TM 9406-15 Grounding Procedures
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**1169-XENG-2509:** Supervise interior plumbing system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring interior plumbing system repairs, personnel, tools, materials, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the plumbing system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Manage repairs.
6. Conduct inspection of repaired plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. TM 9406-15 Grounding Procedures
  4. National Plumbing Code
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**1169-XENG-2609:** Supervise camp sanitation system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, area map, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage installation of sanitation system components.
6. Inspect installed sanitation system.
7. Ensure inspection of installed system by preventive medicine personnel.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
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**1169-XENG-2610:** Supervise field water purification/storage/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field water purification/storage/distribution system installation.
6. Inspect installed field water purification/storage/distribution system.
7. Ensure inspection of installed system by preventive medicine personnel.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
2. FM 10-52 Water Supply in Theaters of Operation
3. FM 10-52-1 Water Supply Point Equipment and Operations
4. FMFRP 0-55 Desert Water Supply

5. NAVMED P-5010 Navy Sanitation
6. TM 9406-15 Grounding Procedures

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**1169-XENG-2611:** Supervise field hygiene equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field hygiene equipment installation.
6. Inspect installed field hygiene equipment.
7. Ensure inspection of installed equipment by preventive medicine personnel.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 9406-15 Grounding Procedures

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**1169-XENG-2612:** Supervise field refrigeration/air conditioning equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the field refrigeration/air conditioning equipment installation.
6. Inspect installed field refrigeration/air conditioning equipment.
7. Ensure inspection of installed equipment by preventive medicine personnel.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
  2. MCO 10110.34E USMC Food Service and Subsistence Program
  3. NAVMED P-5010 Navy Sanitation
  4. NAVSUP P-421 Navy Food Service SOP
  5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  6. TM 9406-15 Grounding Procedures
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**1169-XENG-2613:** Supervisee field electrical power generation/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Manage the electrical power generation/distribution system installation.
6. Inspect installed field electrical power generation/distribution system.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 9406-15 Grounding Procedures
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**1169-XENG-2614:** Supervise camp sanitation system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, camp sanitation system, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect components of the camp sanitation system.
3. Review safety concerns.
4. Review environmental concerns.
5. Coordinate with Preventive Medicine.
6. Monitor operation of camp sanitation system.
7. Identify components needing cleaning/repair/closure.
8. Brief personnel.
9. Monitor system maintenance.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. UNIT SOP Unit's Standing Operating Procedures
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**1169-XENG-2615:** Supervise field water purification/storage/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, water purification/storage/distribution system, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Reports, and camp layout.
2. Inspect the installed water purification/storage/distribution system.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor the operation of water purification/storage/distribution system.
8. Monitor operation of water purification equipment.
9. Monitor operation of forward area water point supply systems.
10. Monitor operation of SIXCON module systems.
11. Monitor operation of water pump assemblies.
12. Monitor operation of mobile water chillers.
13. Monitor use of collapsible tanks and bladders.
14. Ensure water quantity and quality meet requirements.
15. Ensure all water production reports and logs are completed and submitted.
16. Manage water purification/storage/distribution equipment operator maintenance.
17. Ensure records/reports are updated/completed.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. TM 4700-15/1H Ground Equipment Record Procedures

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**1169-XENG-2616:** Supervise field hygiene equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, hygiene equipment, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed hygiene equipment.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of bare base laundry facilities.
8. Monitor operation of bare base shower facilities.
9. Monitor operation of water heaters.
10. Ensure drainage system is functioning properly.
11. Ensure that daily sanitation standards are met.

12. Manage hygiene equipment operator maintenance.
13. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 4700-15/1H Ground Equipment Record Procedures
  8. TM 9406-15 Grounding Procedures
  9. UNIT SOP Unit's Standing Operating Procedures
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**1169-XENG-2617:** Supervise field refrigeration/air conditioning equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, refrigeration/air conditioning equipment, operators, and references.

**STANDARD:** To support the unit mission per the reference.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed refrigeration/air conditioning equipment.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of air conditioning equipment.
8. Monitor operation of ice cream plants.
9. Monitor operation of ice making machines.
10. Monitor operation of refrigeration units.
11. Manage refrigeration/air conditioning equipment operator maintenance.
12. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
2. MCO 10110.34E USMC Food Service and Subsistence Program
3. NAVMED P-5010 Navy Sanitation
4. NAVSUP P-421 Navy Food Service SOP
5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
6. TM 4700-15/1H Ground Equipment Record Procedures

7. TM 9406-15 Grounding Procedures
8. UNIT SOP Unit's Standing Operating Procedures

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**1169-XENG-2618:** Supervise field electrical power generation/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation order, camp layout, electrical power generation/distribution system, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation order and camp layout.
2. Inspect the installed electrical power generation/distribution system.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of generator sets.
8. Monitor operation of floodlight sets.
9. Monitor operation of dummy loads.
10. Monitor electrical distribution system.
11. Ensure electrical loads are balanced.
12. Manage electrical power generation/distribution system operator maintenance.
13. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
4. FM 5-422 Engineer Prime Power Operations
5. FM 5-424 Theater of Operations Electrical Systems
6. TM 4700-15/1H Ground Equipment Record Procedures
7. TM 9406-15 Grounding Procedures
8. UNIT SOP Unit's Standing Operating Procedures

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**1169-XENG-2619:** Supervise field electrical power generation/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field electrical power generation/distribution system.
5. Brief recovery crew.
6. Ensure electrical power generation/distribution system recovery.

**REFERENCES:**

1. EM 0086 Generator Sets and Power Units (CD-ROM)
  2. EM 0158 Power Supplies, Light Sets, and Battery Chargers
  3. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
  4. FM 5-422 Engineer Prime Power Operations
  5. FM 5-424 Theater of Operations Electrical Systems
  6. TM 9406-15 Grounding Procedures
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**1169-XENG-2620:** Supervise field refrigeration/air conditioning equipment recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field refrigeration/air conditioning equipment.
5. Brief recovery crew.
6. Ensure field refrigeration/air conditioning equipment recovery.

**REFERENCES:**

1. EM 0148 Heaters, Air Conditioners, and Support Equipment
  2. MCO 10110.34E USMC Food Service and Subsistence Program
  3. NAVMED P-5010 Navy Sanitation
  4. NAVSUP P-421 Navy Food Service SOP
  5. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data
  6. TM 9406-15 Grounding Procedures
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**1169-XENG-2621:** Supervise field hygiene equipment recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field hygiene equipment.
5. Brief recovery crew.
6. Ensure field hygiene equipment recovery.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 9406-15 Grounding Procedures
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**1169-XENG-2622:** Supervise field water purification/storage/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, completed Water Reconnaissance Reports (DA-1712R), camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field water purification/storage/distribution system.
5. Brief recovery crew.
6. Ensure field water purification/storage/distribution system recovery.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
  2. FM 10-52 Water Supply in Theaters of Operation
  3. FM 10-52-1 Water Supply Point Equipment and Operations
  4. FMFRP 0-55 Desert Water Supply
  5. NAVMED P-5010 Navy Sanitation
  6. TM 9406-15 Grounding Procedures
- 

**1169-XENG-2623:** Supervise camp sanitation system recovery/closure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Utilities Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, environmental impact report, area map, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect sanitation system.
5. Brief recovery/closure crew.
6. Ensure sanitation system recovery/closure.
7. Ensure marking of closed sanitation system.
8. Inspect closed/marked sanitation system.
9. Ensure inspection of closed/marked system by preventive medicine personnel.
10. Ensure closed latrine sites are recorded on area map.
11. Forward marked map to those concerned.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
-

ENG & UTIL T&R MANUAL

CHAPTER 9

MOS 1171 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 9

MOS 1171 INDIVIDUAL EVENTS

**9000. PURPOSE.** This chapter includes all individual training events for the Water Support Technician. An individual event is an event that a trained Water Support Technician would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**9001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4 character identifier. The first four characters represent the MOS (1171).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
MANT - Maintenance  
ADMN - Administration

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Water Support Technician individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**9002. INDIVIDUAL CORE CAPABILITIES 1171**

1. WATER SUPPORT TECHNICIAN 1171 - Career Progression Philosophy

Water Support Technicians serve in the battalions of the Marine Logistics Groups and Marine Wing Support Squadrons of the Air Wing. The tour length for all ranks is 24 months. The order in which a Water Support Technician moves through the Engineer Community is as follows:

a. Water Support Technicians are trained at Utilities Instruction Company, Marine Corps Engineer School, Camp Lejeune, NC.

b. Pvt-SSgt serve in the battalions and squadrons of the Air Wings and Marine Logistics Groups.

c. Cpl-SSgts are afforded the opportunity to receive advanced training by attending the Advance Water Support Technician Course at Utilities Instruction Company, Marine Corps Engineer School Camp Lejeune, NC.

d. Sgt-SSgts can serve as instructors at Marine Corps Engineer School, Camp Lejeune, NC and any independent duty.

2. Billet Description. Water Support Technicians are trained, equipped, and assigned to specific units in the operating forces

#### MISSION OF WATER SUPPORT TECHNICIAN

Water support technicians install, operate, inspect, and perform preventive and corrective maintenance on pumps, water filtration/purification equipment, water storage/distribution systems, and laundry and shower facilities. They conduct and evaluate water surveys, water reconnaissance, and water quality analysis as well as establish, maintain, and close sanitation systems. When on Military Operations Other Than War (MOOTW) these technicians also plan, install, and repair the plumbing systems of structures. These duties include cutting, bending, and threading pipes; joining pipes using screws, bolts, fittings, solder, and plastic solvent; cleaning tanks and filter beds using backwashing; testing water to determine acidity, impurities, turbidity, and conductivity; and regulating the flow of raw water for treatment while mixing it with specified amounts of chemicals (i.e. alum, coagulate, chlorine, ammonia, and lime) in the filtration/purification process. Noncommissioned officers are afforded the opportunity to attend the Advanced Water Support Technician course that provides in-depth instruction on the requirements of the Uniform Plumbing Code and the planning of water support. An apprenticeship program, leading to U.S. Department of Labor certification as a Journey Worker, is available to Water Support Technicians under the United Services Military Apprenticeship Program (USMAP).

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Water Support Technician. The following core skills are identified for MOS 1171:

- a. Install water support equipment.
- b. Operate water support equipment.
- c. Inspect water support equipment.
- d. Maintain water support equipment.
- e. Test water.
- f. Purify water.
- g. Store water.
- h. Distribute water.
- i. Install hygiene equipment.
- j. Operate hygiene equipment.
- k. Inspect hygiene equipment.
- l. Maintain hygiene equipment.
- m. Dispose of waste water.

9. Billet Applicability. The basic duties and core skills for the 1171 MOS are the same throughout the operating forces.

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**9004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1171-ADMN-1101:** Conduct an Operational Risk Assessment (ORA)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Given the inherent dangers involved in working around equipment, electricity and water, effort must be made to ensure risks are reduced or eliminated by implementing controls.

**BILLETS:** Section Head, Section SNCOIC, Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a task/mission, a Risk Management Worksheet, and references.

**STANDARD:** So that task/mission effectiveness is increased while loss of personnel and materiel is minimized through the use of risk management controls per the references.

**PERFORMANCE STEPS:**

1. Review the task/mission.
2. Review the references.
3. Identify hazards.
4. Assess hazards to determine severity and probability.
5. Develop controls.
6. Make risk decisions.
7. Implement controls.

**REFERENCES:**

1. MCO 3500.27B w/Erratum Operational Risk Management (ORM) (May 04)
2. MCRP 5-12.1C Risk Management (Feb 01)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Risk Management Worksheet

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**1171-ADMN-1102:** Control (Lockout/Tagout) hazardous energy

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Equipment Lockout/Tagout ensures personnel are protected from injury during any servicing or maintenance done on machinery or equipment, where the unexpected energizing, start-up, or release of any type of energy (e.g., steam, electricity, hydraulic, pneumatic, and gravity) could occur.

**BILLETS:** Section Head, Section SNCOIC, Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, equipment manuals, Lockout/Tagout devices, forms, and references.

**STANDARD:** So that equipment is locked out or tagged out to protect against accidental or inadvertent start-up, or operation that may cause injury to personnel performing maintenance, service, repair, or modification to the equipment.

**PERFORMANCE STEPS:**

1. Locate all energy isolating devices and hazardous energy sources.
2. Obtain required number of Lockout/Tagout devices.
3. Notify all effected personnel and supervisors.
4. Shut down equipment/turn off circuit.
5. Dissipate or restrain any stored energy.
6. Apply Lockout/Tagout devices.
7. Verify energy is isolated/dissipated (test circuit).
8. Effect required service, maintenance, repairs or modifications to equipment/circuit.
9. Remove Lockout/Tagout devices.
10. Restore equipment/circuit to normal operation.
11. Return Lockout/Tagout devices to program coordinator.

**REFERENCES:**

1. 29 CFR 1910.147 Chapter 29, Code of Federal Regulations, Part Number 1910 (Occupational Safety and Health Standards), Standard Number 147 - Control of Hazardous Energy (Lockout/Tagout)
2. NAVMC DIR 5100.8 Marine Corps Occupational Safety and Health (OSH) Program Manual (Short Title: MarCor OSH Program Manual) (May 06)

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Lockout/Tagout devices; NAVMC 11403 - Lockout/Tagout Checklist.

**UNITS/PERSONNEL:** Lockout/Tagout Program Coordinator

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** NAVMC Dir 5100.8, Chapter 12, provides detailed information for this event.

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**1171-ADMN-1103:** Recover an electric shock victim

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Working around equipment that generates electricity dramatically increases the possibility of electrocution. The ability to safely recover an electric shock victim will save lives.

**GRADES:** PVT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that danger to personnel is eliminated and victim is cared for per the references.

**PERFORMANCE STEPS:**

1. Evaluate the situation.
2. Send for help.
3. Provide for personal protection.
4. Isolate the victim from electrical source.
5. Evaluate the victim.
6. Start artificial resuscitation (if necessary).
7. Remain with victim until medical help arrives.
8. Report incident.

**REFERENCES:**

1. FM 5-424 Theater of Operations Electrical Systems
  2. MCRP 3-02G First Aid
  3. TM 09406-15 Grounding Procedures for Electromagnetic Interference
- 

**1171-ADMN-1104:** React to a hazardous materials spill

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the spill is contained per the references.

**PERFORMANCE STEPS:**

1. Evacuate immediate area, if necessary.
2. Contain spill.
3. Notify proper authorities.
4. Remove uncontaminated material.
5. Properly dispose of the hazardous waste.

**REFERENCES:**

1. MCO 4450.12 Storage and Handling of Hazardous Materials
  2. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  3. MCO P5090.2 Environmental Compliance and Protection Manual
  4. MCRP 4-11B Environmental Considerations in Military Operations
  5. Federal, State, and Local Environmental Regulations
  6. Local Standard Operating Procedures (SOP)
-

**1171-ADMN-1105:** Administer first aid for chemical ingestion/contact

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without references and given a scenario.

**STANDARD:** So that the effect of the chemical is mitigated per the references.

**PERFORMANCE STEPS:**

1. Identify type of first aid required (review MSDS).
2. Apply safety precautions.
3. Give first aid.
4. Send for medical help as soon as possible.

**REFERENCES:**

1. MCRP 3-02G First Aid
- 

**1171-ADMN-1106:** Identify required publications

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a scenario, equipment, and references.

**STANDARD:** So information will be available for accurate completion of work.

**PERFORMANCE STEPS:**

1. Determine equipment National Stock Number (NSN).
2. Determine equipment Identification Number.
3. Determine authorized echelon of maintenance.
4. Obtain publications.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
2. MCO P4790.2C MIMMS Field Manual
3. MCO P5215.17 USMC Technical Publications System
4. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
5. TM 11275-15/3C Characteristics of Engineering Equipment
6. TM 4120-15/1D Principal Technical Characteristics of US Marine Corps Military Standard Air Conditioners (Environmental Control Units (ECU)) with Supplemental Logistics Data



7. UNIT SOP Unit's Standing Operating Procedures

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**1171-ADMN-1107:** Conduct an SL-3 inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment and references.

**STANDARD:** To ensure accountability of all components of sets, kits, chests and major end items per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Obtain Components List (SL-3) for the item.
3. Identify each component using the SL-3.
4. Identify missing components.
5. Identify unserviceable components.
6. Document inventory results.
7. Report any inventory discrepancies and unserviceable components.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
  3. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  4. UM 4400-124 FMF SASSY Using Unit Procedures
  5. Appropriate Technical Manuals
  6. Local Standard Operating Procedures (SOP)
- 

**1171-ADMN-1108:** Conduct a Limited Technical Inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10254), a Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560), equipment, tools, and references.

**STANDARD:** So equipment is inspected for operability and all discrepancies identified per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify components.
3. Verify component function/serviceability.
4. Report any discrepancies identified.
5. Complete the NAVMC 10560.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10254): and Worksheet for Quarterly Preventive Maintenance and Limited Technical Inspection of Engineer Equipment (NAVMC 10560)

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**1171-ADMN-1109:** Document equipment operation history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With equipment, Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524), Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D), and the references.

**STANDARD:** So the NAVMC 10524 and NAVMC 696D are completed with descriptive data, scheduled preventive maintenance intervals, and hours of operation for the equipment indicated per the references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Fill out equipment descriptive data on the NAVMC 10524.
3. Fill out equipment descriptive data on the NAVMC 696D.
4. Record hours/days equipment was operated.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Consolidated Engineer Equipment Operation Log and Service Record (NAVMC 10524); Motor Vehicle and Engineer Equipment Record Folder (NAVMC 696D),

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**1171-ADMN-1110:** Requisition repair parts

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order Shopping List (EROSL) (NAVMC 10925), a list of required parts/components, required unit unique data, equipment technical manuals, and the references.

**STANDARD:** So that the NAVMC 10925 can be processed, ensuring valid requisitions will be created per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manuals and/or stock lists.
3. Complete the NAVMC 10925 header information.
4. Annotate the repair part/component information on the NAVMC 10925.
5. Submit NAVMC 10925 for input into MIMMS.
6. Follow up/reconcile requisitions, as needed/required.
7. Receipt for parts.
8. Maintain repair project layettes.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order Shopping List (EROSL) (NAVMC 10925)

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**1171-ADMN-1111:** Document equipment service/repair history

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Equipment Repair Order (ERO) (NAVMC 10245) and references.

**STANDARD:** So the NAVMC 10245 is complete with descriptive data and service/repair actions for the equipment indicated per the references.

**PERFORMANCE STEPS:**

1. Review the references.

2. Review equipment technical manuals.
3. Fill out equipment descriptive data on the NAVMC 10245.
4. Annotate the service/repair actions taken on the NAVMC 10245.
5. Submit NAVMC 10245 for input into MIMMS.
6. Reconcile NAVMC 10245 information with data on resulting MIMMS reports.
7. File NAVMC 10245.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Equipment Repair Order (ERO) (NAVMC 10245)

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**1171-MANT-1201:** Comply with a Modification Instruction (MI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With references, Modification Instructions, a general mechanic's tool box, and all parts.

**STANDARD:** By applying modification in accordance with instructions.

**PERFORMANCE STEPS:**

1. Review modification instructions.
2. Apply modification.
3. Test modification.
4. Record modification in equipment record jacket.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1171-MANT-1202:** Perform Preventive Maintenance Checks and Services (PMCS) on a Shower Facility

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The shower facility preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a shower facility, tools, personnel preventive maintenance roster, ERO, EROSL, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
  2. TM 10006A-14/P1 Shower Facility, Bare Base
- 

**1171-MANT-1203:** Assist in Preventive Maintenance Checks and Services (PMCS) on a 500 Gallon Capacity Collapsible Fabric Potable Water Drum

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08936A-13&P Forward Area Water Point Supply System
- 

**1171-MANT-1204:** Perform Preventive Maintenance Checks and Services (PMCS) on a Forward Area Water Point Supply System (FAWPSS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Forward Area Point Supply System (FAWPSS) preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Forward Area Point Supply System (FAWPSS), tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
2. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
3. TM 08936A-13&P Forward Area Water Point Supply System

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**1171-MANT-1205:** Perform Preventive Maintenance Checks and Services (PMCS) on a Hypochlorination Unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references,

**STANDARD:** so that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
  2. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
- 

**1171-MANT-1206:** Perform Preventive Maintenance Checks and Services (PMCS) on a Containerized Batch Laundry (CBL) Unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The laundry facility preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a laundry facility, tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 01243E-14/1 Laundry Facility, Bare Base
  2. TM 08444A-15/1 Operation and Overhaul Instruction
- 

**1171-MANT-1207:** Perform Preventive Maintenance Checks and Services (PMCS) on a SIXCON 125 GPM Water Pump Module

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Sixcon Water Pump Module preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Sixcon Pump Tank Module, tools, personnel preventive maintenance roster, ERO, EROSL, and the reference.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review reference.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module
- 

**1171-MANT-1208:** Perform Preventive Maintenance Checks and Services (PMCS) on a 350 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 350 GPM pump preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a pump, tools, personnel preventive maintenance roster, ERO, EROSL, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 10-4320-226-14 350 GPM Pump
  2. TM 10-4320-343-14 350 GPM Pump
  3. TM 10-4320-343-24P Unit Direct Support, and General Support, Maintenance Repair Parts and Special Tools List
-



**1171-MANT-1209:** Perform Preventive Maintenance Checks and Services (PMCS) on a 125 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 125 GPM pump preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a pump, tools, personnel preventive maintenance roster, ERO, EROSL, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
- 

**1171-MANT-1210:** Perform Preventive Maintenance Checks and Services (PMCS) on a SIXCON Water Tank Module

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The SIXCON Water Tank Module preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a SIXCON Water Tank Module, tools, personnel, preventive maintenance roster, ERO, EROSL, and the reference.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review reference.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module
- 

**1171-MANT-1211:** Assist in Preventive Maintenance Checks and Services (PMCS) on a 3,000 Gallon Capacity Collapsible Fabric Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and the references,

**STANDARD:** so that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
- 

**1171-MANT-1212:** Perform Preventive Maintenance Checks and Services (PMCS) on a 600 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 600 GPM pump preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a pump, tools, personnel preventive maintenance roster, ERO, EROSL, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
  2. TM 10-4320-344-10 600 GPM Pump
  3. TM 10-4320-344-24 600 GPM Pump
  4. TM 5-4320-303-10 600 GPM Pump
  5. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
- 

**1171-MANT-1213:** Assist in Preventive Maintenance Checks and Services (PMCS) on a Tactical Water Distribution System (TWDS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Tactical Water Distribution System (TWDS) preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a TWDS, tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
  2. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
  3. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
-

**1171-MANT-1214:** Perform Reverse Osmosis Water Purification Unit (ROWPU) preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Reverse Osmosis Water Purification Unit, tools, personnel, preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So any deficiencies will be identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** DOWNGRADE JUSTIFICATION: In an effort to save financial resources during the implementation of training in the new Tactical Water Purification System (TWPS), students will not be able to actually perform all functions required to prove mastery in the performance of preventive maintenance on a ROWPU. The checklist used during the examination of this task will be modified to have the student verbally explain those functions he will not perform.

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**1171-MANT-1215:** Assist in Preventive maintenance Checks and Services (PMCS) on a 1,500 GPH Tactical Water Purification System (TWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Tactical Water Purification System (TWPS) preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Tactical Water Purification System (TWPS), tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance services.

**REFERENCES:**

1. TM 10802A-14/1 Tactical Water Purification System
- 

**1171-MANT-1216:** Perform Preventive Maintenance Checks and Services (PMCS) on a 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3000 LMT)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The water purification unit preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Medium Fresh Water Purification Unit 3,000 LMT, tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1217:** Perform Preventive Maintenance Checks and Services (PMCS) on a Lightweight Water Purification System (LWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The water purification unit preventive maintenance will be performed per schedule in the preventive maintenance roster. Any deficiencies

will be corrected/identified, and the ERO will reflect all required preventive maintenance action per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools, personnel preventive maintenance roster, ERO, EROSL, and the references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1218:** Assist in Preventive Maintenance Checks and Services (PMCS) on a 20,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
-

**1171-MANT-1219:** Assist in Preventive Maintenance Checks and Services (PMCS) on a 50,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  2. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
- 

**1171-MANT-1220:** Perform operator maintenance on a MEP-806B 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. SL-3-6115/1 Components List for Generator Set, Diesel Engine Driven, Skid Mounted (Oct 04)
2. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw,

- MEP-806B/MEP-816B (Jul 00)
3. TM 9-6115-663-13&P Unit, Direct Support and General Support Maintenance Manual (Including Repair Parts and Special Tools List) for Power Unit, Diesel Engine Driven, 2 ½ Ton Trailer Mounted, 60kw (Oct 93), w/Ch 1 (Nov 93), Ch 2 (Sep 94), & Ch 3 (May 96)
- 

**1171-MANT-1221:** Perform operator maintenance on a MEP-807A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment is serviced per the maintenance schedule and deficiencies are corrected/identified.

**PERFORMANCE STEPS:**

1. Review equipment technical manuals.
2. Inspect equipment.
3. Service equipment.
4. Document the maintenance performed.

**REFERENCES:**

1. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)
- 

**1171-MANT-1301:** Diagnose a Shower Facility malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will diagnose the Shower Facility so that all deficiencies will be identified, the echelon of maintenance determined, and an ERO initiated to show all corrective repair actions to be taken per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty shower facility, an operable generator, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.



**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Diagnose fuel pump malfunction.
2. Diagnose fuel burner system malfunction.
3. Diagnose water pump/components malfunction.
4. Diagnose temperature regulator valve malfunction.
5. Diagnose water delivery/drain system malfunction.
6. Document repair/replacement action required.
7. Initiate EROSL, if parts required.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
2. TM 10006A-14/P1 Shower Facility, Bare Base

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**1171-MANT-1302:** Diagnose a Forward Area Water Point Supply System (FAWPSS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Diagnose 125 GPM pump.
2. Diagnose valves.
3. Diagnose 500 gallon drum (water).
4. Document repair/replacement actions required.
5. Initiate EROSL, if parts required.

**REFERENCES:**

1. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
2. TM 5-4320-309-14 125 GPM Pump

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**1171-MANT-1303:** Diagnose a Hypochlorination Unit malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review reference.
2. Troubleshoot defect.
3. Perform troubleshooting technique.
4. Document the diagnosis.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module
- 

**1171-MANT-1304:** Diagnose a Containerized Batch Laundry (CBL) Unit malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Diagnose fuel pump malfunction.
2. Diagnose fuel burner system malfunction.
3. Diagnose water pump/components malfunction.
4. Diagnose temperature regulator valve malfunction.
5. Diagnose water delivery/drain system malfunction.
6. Document repair/replacement action required.
7. Initiate EROSL, if parts required.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
- 

**1171-MANT-1305:** Diagnose a SIXCON Water Pump Module malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 125 gpm pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 5-4320-309-14 125 GPM Pump
  2. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual (125 GPM)
- 

**1171-MANT-1306:** Diagnose a 350 GPM Water Pump malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 350 gpm pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed

**REFERENCES:**

1. TM 10-4320-226-14 350 GPM Pump
  2. TM 10-4320-343-14 350 GPM Pump
-

**1171-MANT-1307:** Diagnose a 125 GPM Water Pump malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 125 gpm pump will be repaired to full operational capability. The ERO will be documented properly showing repair actions taken, and the pump will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 125 gpm pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  2. TM 5-4320-309-14 125 GPM Pump
- 

**1171-MANT-1308:** Diagnose Sixcon Water Tank Module malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided ERO from owning unit, a faulty Sixcon Water Tank Module, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the reference.

**STANDARD:** The performer will diagnose the Sixcon Water Tank Module so that all deficiencies are identified, the echelon of maintenance determined, and an ERO initiated to show all corrective actions to be taken per the reference.

**PERFORMANCE STEPS:**

1. Diagnose water drain valve assembly malfunctions.
2. Diagnose water level gauge malfunctions.

3. Diagnose manhole assembly malfunctions.
4. Diagnose hose reel assembly malfunctions.
5. Document repair/replacement actions required.
6. Initiate EROSL if parts are required.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module
- 

**1171-MANT-1309:** Diagnose a 600 GPM Water Pump malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 600 gpm pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 10-4320-344-10 600 GPM Pump
  2. TM 10-4320-344-24 600 GPM Pump
- 

**1171-MANT-1310:** Assist in diagnosing a 1,500 GPH Tactical Water Purification System (TWPS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As part of a team and provided a malfunctioning Tactical Water Purification System (TWPS), an electrical power source, equipment records, forms, tools, and references.

**STANDARD:** Recording all deficiencies, determining the echelon of authorized maintenance, initiating an ERO to show all actions to be taken, and completing an EROSL if required per the references.

**PERFORMANCE STEPS:**

1. Determine appropriate checks on air system.
2. Determine appropriate checks on raw water system.
3. Determine appropriate checks on microfiltration system.
4. Determine appropriate checks on reverse osmosis system.
5. Determine appropriate checks on chemical system.
6. Determine appropriate checks on product water system.
7. Determine appropriate checks on electrical system.
8. Determine appropriate checks on extended capabilities modules.
9. Isolate malfunctioning system.
10. Perform checks on malfunctioning system.
11. Make adjustments if necessary.
12. Document findings.
13. Initiate EROSL if necessary.

**REFERENCES:**

1. TM 10802A-14/1 Tactical Water Purification System
2. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System

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**1171-MANT-1311:** Diagnose a 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3000 LMT) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will diagnose the Water Purification Unit so that all deficiencies will be identified, the echelon of maintenance determined, and an ERO initiated to show all corrective action to be taken per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided ERO, a faulty Medium Fresh Water Purification Unit, 3,000 LMT, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the reference.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Diagnose filter section malfunctions.
2. Diagnose piping system malfunctions.
3. Diagnose hypo chlorinator malfunctions.
4. Diagnose slurry feeder malfunctions.

5. Document repair/replacement actions required.
6. Initiate EROSL, if parts required.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1312:** Diagnose a Lightweight Water Purification System (LWPS) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will diagnose the Water Purification Unit so that all deficiencies will be identified, the echelon of maintenance determined, and an ERO initiated to show all corrective action to be taken per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Diagnose filter section malfunctions.
2. Diagnose piping system malfunctions.
3. Diagnose hypo chlorinator malfunctions.
4. Diagnose slurry feeder malfunctions.
5. Document repair/replacement actions required.
6. Initiate EROSL, if parts required.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1351:** Repair a Shower Facility

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The shower facility will be repaired. The ERO will be documented properly showing repair actions taken, and the entire shower facility will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a shower facility that is to be repaired, an operable generator, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the references.

**STANDARD:** The Shower Facility will be repair, the ERO will be documented properly showing repair actions taken, and the entire Shower Facility will be tested to verify proper operation per the references.

**PERFORMANCE STEPS:**

1. Repair water heater fuel pump malfunctions.
2. Repair water heater fuel burner system malfunctions.
3. Repair water pump/components malfunctions.
4. Repair temperature regulator valve malfunctions.
5. Repair water delivery/drain system malfunctions.
6. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
2. TM 10006A-14/P1 Shower Facility, Bare Base

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**1171-MANT-1352:** Repair a 500 Gallon Capacity Collapsible Fabric Potable Water Drum

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting

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**1171-MANT-1353:** Repair a Forward Area Water Point Supply System (FAWPSS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a FAWPSS which is to be repaired, an operable generator, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Repair 125 gpm pump.
2. Repair valves.
3. Repair 500 gallon drum (water).
4. Repair/replacement actions required.

**REFERENCES:**

1. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  2. TM 5-4320-309-14 125 GPM Pump
- 

**1171-MANT-1354:** Repair a Hypochlorination Unit

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** Per TM 09476B-13/1.

**PERFORMANCE STEPS:**

1. Repair water pump/components malfunctions.
2. Repair water delivery/drain system malfunctions.
3. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
- 

**1171-MANT-1355:** Repair a Containerized Batch Laundry (CBL) Unit

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, generator, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Repair water heater fuel pump malfunctions.
2. Repair water heater fuel burner system malfunctions.
3. Repair water pump/components malfunctions.
4. Repair temperature regulator valve malfunctions.
5. Repair water delivery/drain system malfunctions.
6. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
- 

**1171-MANT-1356:** Repair a SIXCON 125 GPM Water Pump Module

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty Water Pump Module to be repaired, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and reference.

**STANDARD:** The Sixcon Water Pump Module will be repaired. The ERO will be documented properly showing repair actions taken, and the entire Sixcon Water Pump Module will be tested to verify proper operation per the reference.

**PERFORMANCE STEPS:**

1. Repair water drain valve assembly malfunction.
2. Repair manhole cover assembly malfunction.
3. Repair hose reel assembly malfunction.
4. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module
- 

**1171-MANT-1357:** Assist in repairing a 350 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 350 GPM pump will be repaired to full operational capability. The ERO will be documented properly showing repair actions taken, and the pump units will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty 350 GPM pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 10-4320-226-14 350 GPM Pump
2. TM 10-4320-343-14 350 GPM Pump

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**1171-MANT-1358:** Repair a 125 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 125 GPM pump will be repaired to full operational capability. The ERO will be documented properly showing repair actions taken, and the pump units will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty 125 GPM pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references,

**STANDARD:** so that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 5-4320-309-14 125 GPM Pump
2. TM-08922A-14/1 Operator's Organizational, Direct Support, and General Support Maintenance Manual (125 GPM)

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**1171-MANT-1359:** Repair a SIXCON Water Tank Module

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Water Tank Module will be repaired to full operational capability. The ERO will be documented properly showing repair actions taken, and the pump units will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty Water Tank Module to be repaired, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and reference.

**STANDARD:** The Sixcon Water Tank Module will be repaired. The ERO will be documented properly showing repair actions taken, and the entire Sixcon Water Tank Module will be tested to verify proper operation per the reference.

**PERFORMANCE STEPS:**

1. Repair water drain valve assembly malfunction.
2. Repair manhole cover assembly malfunction.
3. Repair hose reel assembly malfunction.
4. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module

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**1171-MANT-1360:** Repair a 3,000 Gallon Capacity Collapsible Fabric Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 3,000 gallon water tank will be repaired to full operational capability. The ERO will be documented properly showing repair actions taken,

and the pump units will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty 3,000 gallon water tank, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting

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**1171-MANT-1361:** Assist in repairing a 600 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 600 GPM pump will be repaired to full operations capability. The ERO will be documented properly showing repair actions taken, and the pump units will be tested to verify proper operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a faulty 600 GPM pump, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.

5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 10-4320-344-10 600 GPM Pump
2. TM 10-4320-344-24 600 GPM Pump

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**1171-MANT-1362:** Assist in repairing a 1,500 GPH Tactical Water Purification System (TWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As part of a team and provided a Tactical Water Purification System which is to be repaired, and electrical power source, required support, repair parts, supplies, tools, equipment records, forms, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review equipment records/forms.
2. Isolate malfunctioning system.
3. Replace/repair unserviceable parts.
4. Test repairs.
5. Document repairs.

**REFERENCES:**

1. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System

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**1171-MANT-1363:** Repair a 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3,000 LMT)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 3,000 LMT Water Purification System will be repaired. The ERO will be documented properly showing repair actions taken, and the entire 3,000 LMT Water Purification System will be tested to verify proper operation per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 3,000 Gallons Per Hour (GPH) Light, Medium, Tactical (LMT) Water Purification System which is to be repaired, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the reference.

**STANDARD:** The 3,000 Gallons Per Hour (GPH) LMT Water Purification System (3000 LMT) will be repaired; the ERO will be documented properly showing repair actions taken; and the entire 3,000 GPH LMT Water Purification System will be tested to verify proper operation per the reference.

**PERFORMANCE STEPS:**

1. Repair filter section malfunctions.
2. Repair piping system malfunctions.
3. Repair hypo chlorinator malfunctions.
4. Repair slurry feeder malfunctions.
5. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1364:** Repair a Lightweight Water Purification System (LWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 3,000 LMT Water Purification System will be repaired. The ERO will be documented properly showing repair actions taken, and the entire 3,000 LMT Water Purification System will be tested to verify proper operation per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a 3,000 Gallons Per Hour (GPH) Light, Medium, Tactical (LMT) Water Purification System which is to be repaired, a suitable repair facility, applicable tools, necessary repair parts, needed supplies, and the reference.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Repair filter section malfunctions.
2. Repair piping system malfunctions.
3. Repair hypo chlorinator malfunctions.
4. Repair slurry feeder malfunctions.
5. Document repair/replacement actions performed.

**REFERENCES:**

1. TM 09777A-14/1 Water Purification Systems
- 

**1171-MANT-1365:** Repair a 20,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.
4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  2. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
- 

**1171-MANT-1366:** Repair a 50,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review ERO to understand equipment problem as documented.
2. Review proper sections/chapters of the references.
3. Diagnose pump assembly malfunction.



4. Repair or replace faulty components.
5. Operate pump to verify proper operation.
6. Document repair action performed.

**REFERENCES:**

1. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
  2. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water
- 

**1171-XENG-1501:** Perform water reconnaissance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a field environment with water sources, grid coordinates, yardstick, compass, pencils, paper, water reconnaissance reports, security, a vehicle, a helicopter or airplane, and the references.

**STANDARD:** The water reconnaissance will be performed so that a water source will be selected that can support field equipment and personnel, be developed and purified, and be concealed per the references.

**PERFORMANCE STEPS:**

1. Perform reconnaissance.
2. Perform water chlorine residual test.
3. Perform water sample pH value test.
4. Perform water sample total dissolved solids test.
5. Complete reconnaissance.
6. Complete water reconnaissance report.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
  2. FM 10-52-1 Water Supply Point Equipment and Operations
  3. MCWP 3-17.4 Engineer Reconnaissance
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. MCWP 4-25.5 Bulk Liquids Operations
- 

**1171-XENG-1502:** Test water

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The water test will be performed so that a water source will be selected that can support field equipment and personnel, be developed and purified, and be concealed.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an environment with water sources, water test kit, and the references.

**STANDARD:** To established if water is potable per the references.

**PERFORMANCE STEPS:**

1. Perform water chlorine residual test.
2. Perform water sample pH value test.
3. Perform water sample total dissolved solids test.
4. Complete water test kit, record results.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. MCWP 3-17.4 Engineer Reconnaissance
4. MCWP 4-11.6 Bulk Liquid Operations
5. MCWP 4-25.5 Bulk Liquids Operations
6. NAVMED P-5010 Navy Sanitation
7. NAVMED P-5010-9 PMA Ground Ground Forces, 1991
8. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
9. TM 10-6630-222-12&P Water Quality Analysis Set-Purification

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed operators of the Water Quality Analysis Set, Purification (WQAS-P).

**SPECIAL PERSONNEL CERTS:** Operators of the Water Quality Analysis Set, Purification (WQAS-P) must be licensed.

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**1171-XENG-1503:** Assist in enhancing a water source

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With a water source, pump, strainer, intake screen, digging tools, sand bags, anchors, rope, area map, field report, aerial photographs, water reconnaissance report, schedule of recommended site improvements, equipment and personnel requirements, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review schedule of recommended site improvements.
2. Verify water depth and flow rate.
3. Develop site to enhance flow rate.
4. Deploy raw water suction hoses and accessories.
5. Camouflage equipment and accessories.
6. Provide security.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The tactical situation and problems encountered at a given site will determine the order in which the water source is developed.

---

**1171-XENG-1504:** Assist in establishing a water purification site

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The water purification site will be established so that enough water for using units will be produced; the water point will have sufficient space for trucks to move to and from the water source; the water point will have sufficient drainage so that the area does not become flooded; and the water point and hygiene equipment will be adequately concealed and guarded to reduce the chance of enemy attack per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With area map, field report, aerial photographs, water reconnaissance report, schedule of recommended site improvements, equipment and personnel requirements, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review schedule of recommended site improvements.
2. Set up purification equipment and accessories.
3. Camouflage equipment and accessories.
4. Develop a drainage system.
5. Make traffic provisions.
6. Provide security.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The tactical situation and problems encountered at a given site will determine the order in which the water point is developed.

---

**1171-XENG-1505:** Operate a 125 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 125 GPM pump will be operated so that water will be pumped normally, safely.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 125 GPM pump, oil, grease, fuel, and references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Set up pump.
2. Operate pump.
3. Perform operator maintenance.
4. Disassemble and drain pump.

**REFERENCES:**

1. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
2. TM 5-4320-309-14 125 GPM Pump

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the 125 GPM General Purpose Raw Water Pump Set.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the 125 GPM General Purpose Raw Water Pump Set.

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**1171-XENG-1506:** Operate a 350 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 350 GPM pump will be operated so that water will be pumped normally, safely.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 350 GPM pump, oil, grease, fuel, and references.

**STANDARD:** Per TM 5-4320-266-14.

**PERFORMANCE STEPS:**

1. Set up pump.
2. Operate pump.
3. Perform operator maintenance.
4. Disassemble and drain pump.

**REFERENCES:**

1. TM 5-4320-266-14 350 GPM Pump

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the 350 GPM Centrifugal Pump Unit.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the 350 GPM Centrifugal Pump Unit.

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**1171-XENG-1507:** Operate a 600 GPM Water Pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 600 GPM pump will be operated so that water will be pumped.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 600 GPM, oil, grease, fuel, and references.

**STANDARD:** Per TM 5-4320-303-10.

**PERFORMANCE STEPS:**

1. Set up pump.
2. Operate pump.
3. Perform operator maintenance.
4. Disassemble and drain pump.

**REFERENCES:**

1. TM 5-4320-303-10 600 GPM Pump

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the 600 GPM Water Pumping Assembly.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the 600 GPM Water Pumping Assembly.

---

**1171-XENG-1508:** Assist in setting up a 3,000 Gallon Capacity Collapsible Fabric Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will assist in setting up/dismantling the 3,000 gallon water tank so that it will be level, have no leaks, be assembled with all accessories in place, and filled to top. A cover will be secured over tank such that no foreign matter can enter. All dirt and water will be removed before folding tank; the tank will be dismantled and folded without damage to it or its accessories; damaged tanks will be repaired to a serviceable condition; tanks will be super chlorinated prior to evacuating; and the cover will be removed, visually inspected, scrubbed, and dried as required per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 3,000 gallon water tank with accessories, repair kit, water source, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Prepare site for water tank.
2. Set up tank.
3. Check for leaks.
4. Repair leaks.
5. Conduct visual inspection.
6. Dismantle tank.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
- 

**1171-XENG-1509:** Assist in setting up a 20,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will assist in setting up/dismantling the 20,000 gallon water tank so that it will be level, have no leaks, be assembled with

all accessories in place, and filled to top. All dirt and water will be removed before folding tank; the tank will be dismantled and folded without damage to it or its accessories; damaged tanks will be repaired to a serviceable condition; tanks will be super chlorinated prior to evacuating; and the cover will be removed, visually inspected, scrubbed, and dried as required per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 20,000 gallon water tank with accessories, repair kit, water source, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Prepare site for water tank.
2. Set up tank.
3. Check for leaks.
4. Repair leaks.
5. Conduct visual inspection.
6. Dismantle tank.

**REFERENCES:**

1. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
2. TM 5-5430-216-13&P Tank, Fabric, Collapsible 20,000 Gallon, Water

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**1171-XENG-1510:** Assist in setting up a 50,000 Gallon Capacity Collapsible Fabric Potable Water Tank

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will assist in setting up/dismantling the 50,000 gallon water tank so that it will be level, have no leaks, be assembled with all accessories in place, and filled to top. All dirt and water will be removed before folding tank; the tank will be dismantled and folded without damage to it or its accessories; damaged tanks will be repaired to a serviceable condition; tanks will be super chlorinated prior to evacuating; and the cover will be removed, visually inspected, scrubbed, and dried as required per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 50,000 gallon water tank with accessories, repair kit, water source, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Prepare site for water tank.
2. Set up tank.
3. Check for leaks.
4. Repair leaks.
5. Conduct visual inspection.
6. Dismantle tank.

**REFERENCES:**

1. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set
- 

**1171-XENG-1511:** Operate a MEP-806B 60kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** Per TM 09244B/09245B-14/1.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 09244B/09245B-14-1 Operator, Unit, Direct Support and General Support Maintenance Manual for Generator Set, Skid Mounted, Tactical Quiet, 60kw, MEP-806B/MEP-816B (Jul 00)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-806B 60kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-806B 60kW 60Hz Generator Set.

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**1171-XENG-1512:** Assist in operating a 1,500 GPH Tactical Water Purification System (TWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 1,500 GPH Tactical Water Purification System (TWPS) will be operated so that it will function normally, safely, and not damaged by the operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 1,500 GPH Tactical Water Purification System (TWPS), a water quality analysis kit-purification, access to an 1141 Electrician to wire up generator, if personnel not trained to do so, a watch, earplugs, developed water source, developed water point, and references.

**STANDARD:** Per TM 10802A-14/1.

**PERFORMANCE STEPS:**

1. Install the TWPS.
2. Start generator.
3. Operate TWPS.
4. Perform Product Water test.
5. Perform Operator Maintenance and Operator Maintenance Log.
6. Complete Operators Log.
7. Complete R.O. percent calculation.
8. Complete Water Distribution Log.
9. Shut down TWPS.
10. Preserve TWPS if shut down exceeds 54 hours.
11. Shut down generator.
12. Dismantle System.
13. Prepare TWPS for pack out or storage.

**REFERENCES:**

1. TM 10802A-14/1 Tactical Water Purification System

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the Tactical Water Purification System (TWPS).

**SPECIAL PERSONNEL CERTS:** Operators must be licensed to operate the Tactical Water Purification System (TWPS).

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**1171-XENG-1513:** Operate a 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3,000 LMT)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 3000 LMT Water Purification Unit will be operated so that it will function normally, and will not be damaged by the operation per the references. The operator shall produce product water with a Nephelometric Turbidity Unit (NTU) of 1 or less. The product water shall have a chlorine residual of 5 parts per million (ppm) at production site.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With water source, 3,000 gallon tanks, pumps, fuel, and references.

**STANDARD:** Per TM 09777A-14/1.

**PERFORMANCE STEPS:**

1. Prepare site for Medium Fresh Water Purification Unit.
2. Set up Water Purification Unit.
3. Operate the Water Purification Unit.
4. Conduct operator maintenance.
5. Shut down the Water Purification Uni.

**REFERENCES:**

1. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
2. TM 01034D-12/P1 3000 Gallon Tank
3. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
4. TM 09777A-14/1 Water Purification Systems

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3,000 LMT).

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3,000 LMT).

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**1171-XENG-1514:** Operate a Lightweight Water Purification System (LWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With water source, tools, and references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Prepare site for Water Purification Unit.
2. Set up Water Purification Unit.
3. Operate the Water Purification Unit.
4. Conduct operator maintenance.
5. Shut down the Water Purification Unit.

**REFERENCES:**

1. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
2. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
3. TM 09777A-14/1 Water Purification Systems

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the 3,000 GPH Light, Medium, Tactical (LMT) Water Purification System (3,000 LMT).

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**1171-XENG-1515:** Assist in setting up a Tactical Water Distribution System (TWDS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Tactical Water Distribution System will be operated so that it will be installed and operate without leaks per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided with the components of the Tactical Water Distribution System and the references.

**STANDARD:** The Tactical Water Distribution System will be operated so that it will be installed and operate without leaks per the references.

**PERFORMANCE STEPS:**

1. Prepare site for Tactical Water Distribution System.
2. Set up Tactical Water Distribution System.
3. Operate Tactical Water Distribution System.
4. Conduct operator maintenance.
5. Shut down Tactical Water Distribution System.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
2. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
3. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** TRAM (10K Forklift), (7 1/2 Ton Truck), 250CFM to evacuate and displace water/air.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the Tactical Water Distribution System (TWDS).

**SPECIAL PERSONNEL CERTS:** Operators must be licensed to operate the Tactical Water Distribution System (TWDS).

---

**1171-XENG-1516:** Operate a Hypochlorination Unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Prepare site for Tactical Water Distribution System.
2. Set up Tactical Water Distribution System.
3. Operate Tactical Water Distribution System.
4. Conduct operator maintenance.
5. Shut down Tactical Water Distribution System.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
2. TM 10-4320-303-13 Tactical Water Distribution Equipment System (TWDS) Set
3. TM 5-4320-303-24 Tactical Water Distribution Equipment System (TWDS) Set

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed operators of Hypochlorination Units.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate a Hypochlorination Unit.

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**1171-XENG-1517:** Assist in establishing a water point

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The water point will be established so that enough water for using units will be produced; the water point will have sufficient space for trucks to move to and from the water source; the water point will have sufficient drainage so that the area does not become flooded; and the water point and hygiene equipment will be adequately concealed and guarded to reduce the chance of enemy attack per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a water point site, area map, field report, aerial photographs, water reconnaissance report, schedule of recommended site improvements, equipment and personnel requirements, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review schedule of recommended site improvements.
2. Set up hygiene equipment and accessories.
3. Camouflage hygiene equipment and accessories.
4. Develop a drainage system.
5. Make traffic provisions.
6. Provide security.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** The tactical situation and problems encountered at a given site will determine the order in which the water point is developed.

---

**1171-XENG-1518:** Operate a Forward Area Water Point Supply System (FAWPSS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Forward Area Water Point Supply System will be set up so that it will be installed properly without leaks and able to supply water to support the operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided with the components of the Forward Area Water Point Supply System (FAWPSS) and the references.

**STANDARD:** The FAWPSS will be set up so that it will be installed properly without leaks and able to supply water to support the operation per the references.

**PERFORMANCE STEPS:**

1. Select distribution site.
2. Install water point system.
3. Distribute water.
4. Dismantle water point system.

**REFERENCES:**

1. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
2. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
3. TM 08936A-13&P Forward Area Water Point Supply System

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed operators of the Forward Area Water Point Supply System (FAWPSS).

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the Forward Area Water Point Supply System (FAWPSS).

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**1171-XENG-1519:** Operate a SIXCON Water Pump Module

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will in set up/dismantle, operate the SIXCON Water Tank Module so that it will be level and water will be available at the valve. The SIXCON Pump Module will be set up/dismantled, cleaned, and disinfected as required.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a SIXCON Water Tank Module, tools, and references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Connect vertical stacks of two modules.
2. Connect modules horizontally.
3. Connect hoses and pump.
4. Start the pump, open valve, and distribute water.

**REFERENCES:**

1. TM 08990A-15&P/1 Sixcon Water Tank Module

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed to operate the SIXCON Water Pump Module, 125 GPM, Centrifugal, Potable Water.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the SIXCON Water Pump Module, 125 GPM, Centrifugal, Potable Water.

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**1171-XENG-1520:** Set up SIXCON Water Tank Modules

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The performer will set up/dismantle, operate the SIXCON Water Tank Module so that it will be level and water will be available at the valve. The SIXCON Water Tank Module will be set up/dismantled, cleaned, and disinfected as required.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a SIXCON Water Tank Module, tools, and references.

**STANDARD:** The performer will set up/dismantle the SIXCON Water Tank Module so that it will be level and water will be available at the valve. The SIXCON Water Tank Module will be set up/dismantled, cleaned and disinfected, as required, per the references.

**PERFORMANCE STEPS:**

1. Connect vertical stacks of two modules.
2. Connect modules horizontally.
3. Disconnect modules horizontally.
4. Disconnect vertical stacks of two modules.

**REFERENCES:**

1. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
2. TM 08990A-15&P/1 Sixcon Water Tank Module

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**1171-XENG-1521:** Assist in establishing a shower site

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The shower site will be established so that all personnel will be able to shower on a daily basis; will have sufficient space for the delivery of water to the site; will have sufficient drainage so that the area does not become flooded; and will adequately concealed and guarded to reduce the chance of enemy attack per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a shower site, schedule of recommended site improvements, equipment personnel requirements, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review personnel requirements.
3. Review site location.
4. Determine proper placement of equipment.
5. Develop a drainage system.
6. Make traffic provisions.
7. Ensure male and female hours are posted at site.
8. Provide security.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
  2. TM 08444A-15/1 Operation and Overhaul Instruction
  3. TM 10006A-14/P1 Shower Facility, Bare Base
- 

**1171-XENG-1522:** Operate a Bare Base Shower Facility

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Bare Base Shower Facility will be operated so that it will function normally, safely, and not damaged by the operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Bare Base Shower Facility with water heater, water source, fuel, access to an 1141 Electrician to wire up generator, if personnel not trained to do so, and the references.

**STANDARD:** The Bare Base Shower Facility will be operated so that it will function normally, safely, and will not be damaged by the operation per the references.

**PERFORMANCE STEPS:**

1. Prepare site for Shower Facility.
2. Set up Shower Facility.
3. Start up generator set.
4. Operate the Shower Facility.



5. Perform operator maintenance.
6. Shut down generator set.
7. Dismantle Shower Facility.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
2. TM 08444A-15/1 Operation and Overhaul Instruction
3. TM 10006A-14/P1 Shower Facility, Bare Base

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Graduates of the Basic Water Support Technician Course (CID: M031102) are licensed operators of the Bath Shower Unit, Expedition.

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the Bath Shower Unit, Expedition.

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**1171-XENG-1523:** Assist in establishing a laundry site

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The laundry site will be established so that it will have sufficient space for the delivery of water to the site; will have sufficient drainage so that the area does not become flooded; and will be adequately concealed and guarded to reduce the chance of enemy attack per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a laundry site, schedule of recommended site improvements, equipment personnel requirements, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review personnel requirements.
3. Review site location.
4. Determine proper placement of equipment.
5. Develop a drainage system.
6. Make traffic provisions.
7. Provide security.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
  2. TM 08444A-15/1 Operation and Overhaul Instruction
  3. Appropriate Technical Manuals
-

**1171-XENG-1524:** Operate a MEP-807A 100kW 60Hz Generator Set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With tools and references.

**STANDARD:** Per the Operator's Technical Manual.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up generator set.
3. Perform pre-operations checks.
4. Ensure all power cables are installed.
5. Start generator set.
6. Perform generator during operations checks.
7. Shut down generator set.
8. Perform after operation inspection.

**REFERENCES:**

1. TM 07464A-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100kw, Mep 007A (Jun 73), w/Ch 1 (Jan 75), Ch 2 (Dec 75), Ch 2 (Dec 75), Ch 3 (Jun 77), Ch 4 (Apr 78), Ch 5 (Nov 79), Ch 6 (Sep 80), & Ch 7 (May 82)
2. TM 07464B-12 Operator and Organizational Maintenance Manual for Generator Set, Diesel Engine Driven, Tactical, Skid Mounted, 100 kW, MEP-007B
3. TM 07464C-35 Systems Operation Testing and Adjusting for Caterpillar Generator Sets (Feb 00)

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MEP-807A 100kW 60Hz Generator Set; General Mechanic's Tool Box

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Operator must be licensed to operate the MEP-807A 100kW 60Hz Generator Set.

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**1171-XENG-1525:** Operate a Containerized Batch Laundry (CBL) Unit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Containerized Batch Laundry Unit will be operated so that it will function normally, safely, and not damaged by the operation per the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Containerized Batch Laundry Unit, water heater, water source, fuel, access to an 1141 Electrician to wire up generator, if personnel not trained to do so, and the references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Prepare site for CBL unit.
2. Set up CBL unit.
3. Start up generator set.
4. Operate the CBL unit.
5. Perform operator maintenance.
6. Shut down generator set.
7. Dismantle CBL unit.

**REFERENCES:**

1. TM 01034D/1 Tank, Fabric, Self Supporting
  2. TM 08444A-15/1 Operation and Overhaul Instruction
  3. Appropriate Technical Manuals
- 

**1171-XENG-1526:** Install camp sanitation devices

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The camp sanitation system will be installed, recovered, and closed so that it will support the number of personnel and facilities specified, recovered, and closed to protect the environment and the health of others per the reference.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a camp layout, an environmental impact report, a map of the area, a utilities reconnaissance report, and the reference.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Install sanitation devices.
3. Recover sanitation devices.
4. Close sanitation devices.

**REFERENCES:**

1. FM 21-10 Field Hygiene and Sanitation

**SUPPORT REQUIREMENTS:**

**OTHER SUPPORT REQUIREMENTS:** Marines of any MOS can assist in the establishing, recovery, and closing of sanitary devices.

---

**1171-XENG-1527:** Assist in camouflaging equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** At a remote site with equipment.

**STANDARD:** So that site detection is avoided by routine enemy surveillance.

**PERFORMANCE STEPS:**

1. Determine threats.
2. Identify critical equipment.
3. Identify availability of natural cover and concealment.
4. Select camouflage materials and techniques.
5. Install decoys.
6. Space equipment irregularly (in length and depth).
7. Cover equipment with nets and other materials that blend with background.
8. Inspect camouflaging, from different angles, for ease of detection.

**REFERENCES:**

1. FM 20-3 Camouflage
- 

**1171-XENG-1528:** Assist in the recovery/closure of camp sanitation devices

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a camp layout, an environmental impact report, a map of the area, a utilities reconnaissance report, and the reference.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Recover sanitation devices.
3. Close sanitation devices.

**REFERENCES:**

1. FM 21-10 Field Hygiene and Sanitation

**SUPPORT REQUIREMENTS:**

**OTHER SUPPORT REQUIREMENTS:** Marines of any MOS can assist in the establishing, recovery, and closing of sanitary devices.

---

**1171-XENG-1529:** Calculate chlorine demand

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The chlorine demand will be calculated to ensure the post treatment of the potable water will be a safe level for drinking or storage according to the references.

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a potable water source, chlorine test kits, and references.

**STANDARD:** So that posts treatment of potable water remains at a safe level per the references.

**PERFORMANCE STEPS:**

1. Perform water chlorine residual test.
2. Identify the Chlorine Residual standards.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
  2. FM 10-52-1 Water Supply Point Equipment and Operations
- 

**1171-XENG-1601:** Install a plumbing system in a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a structure, construction blueprints, tools, a bill of materials (BOM), all materials listed on the BOM, and the reference,

**STANDARD:** so that the structure will be plumbed per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the blueprints.
2. Review applicable section(s) of the reference.
3. Install pipes.
4. Test system.

**REFERENCES:**

1. National Plumbing Code
- 

**1171-XENG-1602:** Install plumbing fixtures in a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a structure, construction blueprints, tools, a bill of materials (BOM), and the reference.

**STANDARD:** So that the structure will be fitted with the plumbing fixtures per the construction blueprints and the installation will be completed safely and on time per the reference.

**PERFORMANCE STEPS:**

1. Review the blueprints.
2. Review the applicable section(s) or the reference.
3. Install the fixtures.
4. Test the system.

**REFERENCES:**

1. National Plumbing Code
- 

**1171-XENG-1603:** Repair the plumbing system of a permanent structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** In a structure with a faulty interior plumbing system, a report detailing specific repairs to be made, personnel, tools, materials, and references.

**STANDARD:** Per the Uniform Plumbing Code (UPC).

**PERFORMANCE STEPS:**

1. Review the repairs to be made and the references.
2. Determine code requirements.
3. Identify risks.
4. Make the plumbing repairs.
5. Inspect the repairs.

**REFERENCES:**

1. National Plumbing Code
-

**9005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1171-ADMN-2112:** Apply safety programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With resources and references.

**STANDARD:** To ensure applicable safety measures and procedures are in place per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Identify equipment safety requirements.
3. Identify personnel safety requirements.
4. Conduct Operational Risk Assessments.
5. Implement safety procedures.
6. Conduct safety awareness training.
7. Evaluate safety programs.
8. Enforce safety regulations.
9. Provide input for/submit required reports.

**REFERENCES:**

1. DOD 6055.1 DOD Occupational Safety and Health (OSH) Program
  2. FM 100-14 Risk Management
  3. FM 5-424 Theater of Operations Electrical Systems
  4. MCO 3500.27B Operational Risk Management
  5. MCO 5100.19 MC Traffic Safety Program (DRIVESAFE)
  6. MCO 5100.29 Marine Corps Safety Program
  7. MCO 5100.30A Marine Corps Off-Duty And Recreation Safety Program
  8. MCO 5102.1B Mishap Investigation, Reporting and Record-keeping
  9. MCO 5104.3 Marine Corps Radiation Safety Program
  10. MCO P4790.2 MIMMS Field Procedures Manual
  11. MCO P5090.2A Environmental Compliance and Protection Manual
  12. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  13. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  14. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
  15. UNIT SOP Unit's Standing Operating Procedures
  16. National Electrical Code
  17. National Plumbing Code
- 

**1171-ADMN-2113:** Enforce compliance with environmental regulations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section Head, Water Support Technician



**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With references.

**STANDARD:** To ensure environmental policies and procedures are adhere to per the references.

**PERFORMANCE STEPS:**

1. Review the references.
  2. Identify applicable environmental regulations.
  3. Inspect for unit compliance with environmental regulations and restrictions.
  4. Conduct environmental awareness training.
  5. Monitor unit for environmental compliance.
  6. Monitor hazardous materials storage areas.
  7. Maintain Material Safety Data Sheets (MSDS).
  8. Report any environmental infractions that require reporting.
- 

**1171-ADMN-2114:** Supervise Military Occupational Specialty (MOS) training

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section Head, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With training resources, records, and references.

**STANDARD:** To ensure MOS proficiency is maintained per the references.

**PERFORMANCE STEPS:**

1. Identify individual training requirements.
2. Identify unit training requirements.
3. Develop training program policies and procedures.
4. Plan MOS training program to include apprenticeship program considerations.
5. Determine on the job and sustainment training requirements by grade and MOS.
6. Develop lesson plans.
7. Develop training methods/aids/materials as required.
8. Schedule MOS sustainment training.
9. Ensure MOS training is conducted.
10. Maintain lesson plans.
11. Document MOS training.
12. Encourage use of self-directed study and assist in providing resources.
13. Maintain individual training records.

**REFERENCES:**

1. MCO 1510.34\_ Individual Training Standards System

2. MCO 1510.96\_ Individual Training Standards System for Utilities, Occupational Field 11
  3. MCO 1553.1 The Marine Corps Training and Education System
  4. MCO 1553.3A USMC Unit Training Management Guide
  5. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
  6. MCO 3501.7A MCCRES
  7. MCO P1560.25\_ Marine Corps Lifelong Learning Program
  8. MCO P4790.2 MIMMS Field Procedures Manual
  9. MCRP 3-0 A Unit Training Management Guide
  10. MCRP 3-0B How to Conduct Training
  11. UNIT SOP Unit's Standing Operating Procedures
  12. Systems Approach to Training (SAT) Manual
- 

**1171-ADMN-2115:** Submit a Technical Publications Change Recommendation (NAVMC 10772)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With the reference, a NAVMC 10772, and a publication error/deficiency.

**STANDARD:** To affect corrections/improvements to the publication per the reference.

**PERFORMANCE STEPS:**

1. Obtain a NAVMC 10772 from the section publications representative.
2. The individual detecting the error/deficiency will fill out the NAVMC 10772.
3. Return the NAVMC 10772 to the Publications representative.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
- 

**1171-ADMN-2116:** Submit a Product Quality Deficiency Report (PQDR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a defective item and references.

**STANDARD:** So that the deficiency can be corrected per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Verify that the deficiency requires a PQDR.
3. Determine if deficiency is Category I or Category II.
4. Establish exhibit controls.
5. Collect data.
6. Complete PQDR.
7. Submit PQDR.

**REFERENCES:**

1. MCO 4400.120A Joint Regulation Governing the use and Application of Uniform Source Maintenance and Recoverability Codes
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
  4. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  5. MCO P4400.82 MIMMS Controlled Item Management Manual
  6. UM 4400-124 FMF SASSY Using Unit Procedures
- 

**1171-ADMN-2117:** Schedule equipment maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With maintenance resources and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Provide input to the unit MMSOP.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. MCO P4790\_1B MIMMS INTRO MANUAL
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1171-ADMN-2118:** Monitor maintenance management reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With MIMMS (AIS) reports, supporting documentation, and references.

**STANDARD:** Ensuring accuracy of the reports per the references.

**PERFORMANCE STEPS:**

1. Monitor Daily Process Report (DPR).
2. Monitor Daily Transaction Listing (DTL).
3. Monitor Daily SASSY Transactions.
4. Monitor Daily LM2 Report.
5. Monitor Weekly TAM Report.
6. Monitor Weekly Maintenance Exceptions Report.
7. Monitor Weekly Material Report.
8. Monitor Weekly LM2 Report.
9. Monitor Weekly Shop Summary Report.
10. Monitor Class II Reports.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO 4400-16G UMMIPS
  4. MCO P4790.2 MIMMS Field Procedures Manual
  5. TM 4700-15/1H Ground Equipment Record Procedures
  6. UM 4400-124 FMF SASSY Using Unit Procedures
  7. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  8. UNIT SOP Unit's Standing Operating Procedures
- 

**1171-ADMN-2119:** Oversee maintenance related programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment and references.

**STANDARD:** To enhance unit readiness per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance related programs.
2. Inspect equipment.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Oversee Modification Control program.

6. Oversee Calibration Control program.
7. Oversee New Equipment Warranty program.
8. Oversee Joint Oil Analysis Program (JOAP).
9. Oversee Replacement Evacuation (R&E) program.
10. Oversee Quality Deficiency (QDR) program.
11. Oversee Recoverable Items (WIR) program.
12. Oversee Quality Control (QC) program.
13. Oversee Corrosion Prevention and Control (CPAC) program.
14. Ensure records are updated.

**REFERENCES:**

1. MCO 4105.2 Marine Corps Warranty Program
2. MCO 4400.194 Class VII Stock Rotation Program
3. MCO 4731.1 Oil Analysis Program for Ground Equipment
4. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
5. MCO 4790.18 Corrosion Prevention and Control (CPAC) Program
6. MCO P4400.150E Marine Corps Consumer Level Policy Manual
7. MCO P4400.82 MIMMS Controlled Item Management Manual
8. MCO P4790.2 MIMMS Field Procedures Manual
9. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
10. TI-4710-14/1E Replace and Evac Criteria USMC Equipment
11. TI-4731-14/1C MC Joint Oil Analysis Program
12. TM 4700-15/1H Ground Equipment Record Procedures
13. TM 4795-12/1 Organizational Corrosion Prevention and Control Procedures
14. UNIT SOP Unit's Standing Operating Procedures

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**1171-ADMN-2120:** Inspect maintenance actions (quality control)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With repaired equipment, maintenance forms and references.

**STANDARD:** To ensure equipment has been repaired and all documentation is complete per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the Equipment Repair Order.
3. Verify completion of maintenance actions.
4. Verify equipment's operational condition.
5. Reject faulty equipment.
6. Verify equipment closeout.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual

2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
4. Appropriate Technical Manuals

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**1171-ADMN-2121:** Prepare equipment for embarkation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Embarkation NCO, Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, unit MAFTF Deployment Support System II (MDSS II)/Marine Air Ground Task Force II (MAFTF II) Logistics Automated Information System (LOGAIS) and/or Joint Operational Planning and Execution System (JOPES) reports, Logistics Automated Marking and Reading Symbols (LOGMARS) labeling support, and references.

**STANDARD:** To support unit readiness/movement per the references.

**PERFORMANCE STEPS:**

1. Review the MDSS II, MAFTG II LOGAIS, and/or JOPES reports.
2. Inspect assigned equipment.
3. Identify Remain Behind Equipment (RBE).
4. Identify Leave Behind Equipment (LBE).
5. Determine safety/environmental considerations.
6. Mark equipment for transportation/embarkation to include LOGMARS labels.
7. Disassemble, stow, pack, and/or prepare equipment for transportation/embarkation.
8. Coordinate with unit embark personnel to ensure that discrepancies with MDSS II, MAGTF II LOGAIS, and or JOPES reports are corrected.

**REFERENCES:**

1. DODD 4500.9 Transportation and Traffic Management
  2. FM 101-10-1\_ Organizational, Technical and Logistical Data
  3. FM 55-15 Transportation Reference Data
  4. FM 55-9 Unit Air Movement Planning
  5. FMFM 3-1 Command and Staff Action
  6. FMFM 4-6 Movement of Units in Air Force Aircraft
  7. Joint Publication 3-02 Joint Doctrine for Amphibious Operations
  8. MCO 4610.35 USMC Equipment Characteristics File
  9. MCO P3000.18 Marine Corps Planner's Manual
  10. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  11. MCO P4600.7\_ USMC Transportation Manual
  12. MCWP 3-31.5 Ship-to-Shore Movement
  13. MCWP 4-11.3 Transportation Operations
  14. TM 4700-15/1H Ground Equipment Record Procedures
  15. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and
  16. TM 55-2200-001-12 Application of Blocking, Bracing, and Tie Down Material
-

**1171-MANT-2401:** Perform Preventive Maintenance Checks and Services (PMCS) on a Small Mobile Water Chiller

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools, ERO, and references.

**STANDARD:** So that equipment is checked and serviced per the maintenance schedule and deficiencies corrected/identified per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Complete ERO.
3. Perform preventive maintenance services.
4. Document the maintenance performed.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1171-MANT-2402:** Diagnose a M17MCHF Lightweight Decontamination System water pump malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With tools and references,

**STANDARD:** so that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review references.
2. Troubleshoot defect.
3. Perform troubleshooting technique.
4. Document the diagnosis.

**REFERENCES:**

1. Appropriate Technical Manuals
-

**1171-MANT-2403:** Diagnose a 600 GPH Reverse Osmosis Water Purification Unit (ROWPU) malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an ERO, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the references.
2. Troubleshoot defect.
3. Perform troubleshooting technique.
4. Document repair/replacement action required.
5. Initiate EROSL, if parts required.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1171-MANT-2404:** Diagnose a Small Mobile Water Chiller water pump malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an ERO, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the references.
2. Troubleshoot the defect.
3. Perform troubleshooting technique.
4. Document repair/replacement action required.
5. Initiate EROSL, if parts required.

**REFERENCES:**

1. Appropriate Technical Manuals
-



**1171-MANT-2405:** Repair a M17MCHF Lightweight Decontamination System water pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the ERO to understand equipment problem as documented.
3. Repair or replace faulty components.
4. Test repairs.
5. Document repair actions performed.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1171-MANT-2406:** Repair a 600 GPH Reverse Osmosis Water Purification Unit (ROWPU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the ERO to understand problem as documented.
3. Repair or replace faulty components.
4. Test repairs.
5. Document repair actions performed.

**REFERENCES:**

1. Appropriate Technical Manuals
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**1171-MANT-2407:** Repair a Small Mobile Water Chiller water pump

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an ERO, tools, repair parts, and references.

**STANDARD:** So that the equipment functions/operates as specified in the equipment technical manuals.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the ERO to understand equipment problems as documented.
3. Repair or replace faulty components.
4. Test repairs.
5. Document repair actions performed.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1171-MANT-2408:** Operate a multimeter

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Quality Control NCO, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an electrical circuit and references.

**STANDARD:** So that the electrical outputs of the circuit are measured.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform pre-operation checks.
3. Determine correct setting (AC, DC+/-, resistance or current).
4. Test the circuit (voltage, resistance, current).
5. Record readings.
6. Perform post operation checks.

**REFERENCES:**

1. EC 2/DC Electricity Concepts 1 Electricity Concepts 2 AC Circuits by Energy Concepts, Inc.
2. EC I/DC Electricity Concepts 1 DC Circuits by Energy Concepts, Inc
3. FM 11-60 Communications-Electronics Fundamentals: Basic Principles, Direct Current

4. FM 11-61 Communications-Electronics Fundamentals: Basic Principles, Alternating Current
5. FM 55-509-1 Introduction to Marine Electricity
6. IM 8024B Manufacturer's Instruction Manual for Fluke Model 8024B Digital Multimeter
7. TM 10209-10/1 Use and Care of Hand Tools & Measuring Tools
8. TM 2000-15/4 Power System Reference Manual
9. Appropriate Equipment Manual

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** multimeter

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**1171-MANT-2409:** Isolate the electrical malfunction on a 1,500 GPH Tactical Water Purification System (TWPS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an ERO, generator, tools, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the ERO to determine possible problems.
3. Diagnose High Pressure pump electrical malfunctions.
4. Diagnose Turbo Charger electrical malfunction.
5. Diagnose Control Panel electrical malfunctions.
6. Diagnose chemical feed pump electrical malfunctions.
7. Diagnose Solenoid Instrument Panel electrical malfunctions.
8. Diagnose Air System electrical malfunctions.
9. Document repair/replacement actions required.
10. Initiate EROSL to order required repair parts.

**REFERENCES:**

1. TM 10802A-14/1 Tactical Water Purification System
  2. TM 10802A-24P/2 Unit, Direct Support and General Support Maintenance Repair Parts and Special Tools List Manual for Tactical Water Purification System
- 

**1171-MANT-2410:** Isolate the electrical malfunction on a shower facility

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As part of a team and provided a malfunctioning Shower Facility, an electrical power source, water source, tools, test measurement and diagnostic equipment (TMDE), forms, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the references.
2. Apply PPE.
3. Identify faulty component(s).
4. Record findings.

**REFERENCES:**

1. TM 08444A-15/1 Operation and Overhaul Instruction
2. TM 10006A-14/P1 Shower Facility, Bare Base

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**1171-MANT-2411:** Diagnose water pump fuel system malfunction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As part of a team and provided a Water Pump with a malfunctioning fuel system, water source, tools, test measurement and diagnostic equipment (TMDE), forms, and references.

**STANDARD:** So that equipment faults are identified and corrective action(s) initiated.

**PERFORMANCE STEPS:**

1. Review the references.
2. Apply PPE.
3. Identify faulty component(s).
4. Record findings.

**REFERENCES:**

1. TM 10-4320-226-14 350 GPM Pump
  2. TM 10-4320-343-14 350 GPM Pump
  3. TM 10-4320-344-10 600 GPM Pump
  4. TM 10-4320-344-24 600 GPM Pump
-

**1171-MANT-2412:** Supervise equipment preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section Head, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment preventive maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.
5. Determine maintenance priorities.
6. Develop preventive maintenance schedule.
7. Supervise equipment preventive maintenance program.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
- 

**1171-MANT-2413:** Supervise equipment corrective maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Section Head, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With equipment, personnel, records, reports, and references,

**STANDARD:** to support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Determine equipment corrective maintenance requirements.
2. Determine support and test equipment assets and requirements.
3. Determine safety requirements.
4. Determine environmental requirements.

5. Determine maintenance priorities.
6. Supervise equipment corrective maintenance procedures.

**REFERENCES:**

1. MCO 4733.1 Marine Corps Test, Measurement, and Diagnostic Equipment (TMDE) Calibration and Maintenance Program (CAMP)
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
  7. Appropriate Technical Manuals
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**1171-XENG-2530:** Operate Reverse Osmosis Water Purification Unit (ROWPU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Reverse Osmosis Water Purification Unit, a watch, earplugs, developed water source, and references,

**STANDARD:** so that it will function normally, safely, and will not be damaged by the operation per the references.

**PERFORMANCE STEPS:**

1. Install Reverse Osmosis Water Purification Unit (ROWPU) tanks.
2. Start Generator.
3. Operate ROWPU.
4. Perform turbidity test.
5. Perform operator maintenance.
6. Complete Daily Water Purification Log-ROWPU (DA Form 1713-1-R).
7. Complete Daily Water Distribution Log.
8. Shut down ROWPU.
9. Shut down generator.
10. Complete Water Point Daily Production Summary.
11. Complete Water Point Daily Distribution Summary.
12. Dismantle system.
13. Repack system for movement.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 20-31 Electric Power Generation in the Field
4. FM 21-10 Field Hygiene and Sanitation
5. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
6. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Due to changes required in training facilities to implement training on the Tactical Water Purification System (TWPS), graduates of the Basic Water Support Technician course (CID: M031102) will not be licensed to operate the ROWPU. During the course they will not be able to actually perform all functions required to prove mastery in the operation of a ROWPU.

**SPECIAL PERSONNEL CERTS:** Reverse Osmosis Water Purification Unit (ROWPU) operators will need to be licensed through an authorized licensing program in the Total Force.

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**1171-XENG-2531:** Operate a Small Mobile Water Chiller

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided with tools and references.

**STANDARD:** Per the equipment operator's manual.

**PERFORMANCE STEPS:**

1. Review the references.
2. Set up the Small Mobile Water Chiller.
3. Operate the Small Mobile Water Chiller.
4. Conduct operator maintenance.
5. Shut down the Small Mobile Water Chiller.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Small Mobile Water Chiller operators will need to be licensed through an authorized licensing program in the Total Force.

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**1171-XENG-2532:** Analyze water reconnaissance report(s)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With water reconnaissance report(s), Operation Plan, calculator, and references.

**STANDARD:** So that water source(s) can be selected/developed to support water purification requirements per Commander's intent, goals, and objectives.

**PERFORMANCE STEPS:**

1. Review reconnaissance report(s), Operation Plan, and references.
2. Determine amount of water required to support the Operation Plan.
3. Identify volume of water available from water source(s).
4. Identify quality of water available from water source(s).
5. Identify operational risks associated with water source(s).
6. Identify environmental risks associated with water source(s).
7. Determine requirements to develop water source(s).
8. Determine camouflage, concealment, and decoy requirements.
9. Determine security requirements/vulnerabilities.
10. Determine transportation routes/road networks.
11. Select/prioritize water source(s) to support Operation Plan's requirements.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
  2. FM 90-3 Desert Operations
  3. FM 90-5 Jungle Operations
  4. FMFM 4-4 Engineer Operations
  5. MCRP 3-17B Engineer Forms and Reports
  6. MCWP 3-17 Engineer Operations
  7. MCWP 3-17.4 Engineer Reconnaissance
  8. MCWP 3-35.5 Jungle Operations
  9. MCWP 3-35.6 Desert Operations
  10. MCWP 3-41.1 Rear Area Operations
  11. MCWP 4-11 Combat Service Support
  12. MCWP 4-11.6 Bulk Liquid Operations
  13. MCWP 4-25.5 Bulk Liquids Operations
  14. NAVMED P-5010-9 PMA Ground Ground Forces, 1991
  15. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  16. TM 09241B-12&P Water Quality Analysis Set, Purification Model WQAS-1
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**1171-XENG-2533:** Develop water support plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL



**CONDITION:** With an Operation Plan requiring a Base Camp(s), area map, area reconnaissance report, water reconnaissance report(s), camp layout(s), and references.

**STANDARD:** So that the Commander's intent, goals, and objectives are supported; with water sites and distribution points drawn on to the camp layout(s) and a Course of Action (COA) established; with time lines listing equipment and personnel requirements for safe and efficient set up, operation, and maintenance for the duration of the mission; and retrograde.

**PERFORMANCE STEPS:**

1. Review the Operation Plan, map, reconnaissance report (s), camp layout(s), and references.
2. Identify equipment/personnel requiring water support.
3. Determine water purification/storage/distribution equipment requirements, selecting equipment sites.
4. Determine environmental impacts.
5. Plot equipment sites on camp layout(s).
6. Select water point location(s) making provisions for traffic and drainage.
7. Plot water point(s) on camp layout(s).
8. Plot distribution methods on camp layout(s).
9. Identify potential impact of weather/climate on water purification, storage, and distribution operations.
10. Determine risks conducting operational risk assessments.
11. Identify off limit areas (i.e., generator sites, hazardous material sites, etc.).
12. Determine number and type of warning signs required.
13. Schedule Preventive Maintenance Checks and Services (PMCS).
14. Determine POL requirements.
15. Determine chemical requirements for purification/storage operations.
16. Determine camouflage, concealment, and decoy requirements.
17. Determine security requirements.
18. Estimate manhour requirements determining number of water support personnel required to support the mission.
19. Establish operator schedules.
20. Estimate logistical support (truck, forklift, etc.) required.
21. Establish Bill of Materials (BOM) including security, camouflage, environmental, and safety items.
22. Establish a Course of Action (COA).
23. Record requirements for input into Appendix 2 to Annex D of the Operation Order.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. FM 10-52-1 Water Supply Point Equipment and Operations
3. FM 100-15 Corps (Larger Unit) Operations
4. FM 100-19 Domestic Support Operations
5. FM 100-23-1 Humanitarian Assistance Operations
6. FM 20-3 Camouflage
7. FM 21-10 Field Hygiene and Sanitation
8. FM 21-10-1 Unit Field Sanitation
9. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
10. FM 5-101-5-1 Operational Terrain and Symbols
11. FM 5-163 Sewerage
12. FM 90-3 Desert Operations

13. FM 90-5 Jungle Operations
  14. FMFM 4-4 Engineer Operations
  15. FMFRP 0-55 Desert Water Supply
  16. MCRP 3-17B Engineer Forms and Reports
  17. MCRP 4-11.1D Field Hygiene and Sanitation
  18. MCRP 4-11B Environmental Considerations in Military Operations
  19. MCWP 3-17 Engineer Operations
  20. MCWP 3-35.1 Cold Weather Operations
  21. MCWP 3-35.2 Mountain Operations
  22. MCWP 3-35.3 Military Operations on Urbanized Terrain
  23. MCWP 3-35.5 Jungle Operations
  24. MCWP 3-35.6 Desert Operations
  25. MCWP 3-41.1 Rear Area Operations
  26. MCWP 3.21.1 Aviation Ground Support
  27. MCWP 4-11 Combat Service Support
  28. MCWP 4-11.1 Health Service Support Operations
  29. MCWP 4-11.3 Transportation Operations
  30. MCWP 4-11.4 Maintenance Operations
  31. MCWP 4-11.5 SeaBee Operations in the MAGTF
  32. MCWP 4-11.6 Bulk Liquid Operations
  33. MCWP 4-25.5 Bulk Liquids Operations
  34. MCWP 5-1 Marine Corps Planning Process
  35. NAVMED P-5010 Navy Sanitation
  36. NAVMED P-5010-9 PMA Ground Ground Forces, 1991
  37. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
  38. TC 3-34.489 The Soldier and the Environment
  39. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  40. Appropriate Technical Manuals
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**1171-XENG-2534:** Develop hygiene equipment support plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Plan requiring a Base Camp(s), area map, camp layout(s) with water source and distribution points indicated, known soil type(s), and references.

**STANDARD:** So that the Commander's intent, goals, and objectives are supported; with hygiene equipment site(s) drawn on the camp layout(s) and a Course of Action (COA) established; with time lines listing equipment and personnel requirements for safe and efficient set up, operation, and maintenance for the duration of the mission; and retrograde.

**PERFORMANCE STEPS:**

1. Review the Operation Plan, map, camp layout(s), and references.
2. Identify personnel requiring hygiene support.

3. Determine hygiene equipment requirements, selecting equipment sites and making provisions for traffic and drainage.
4. Determine environmental impacts.
5. Plot equipment sites on camp layout(s).
6. Identify potential impact of weather/climate on hygiene equipment operations.
7. Determine risks conducting operation risk assessments.
8. Identify off limit areas (i.e., generator sites, hazardous material sites, etc.).
9. Determine number and type of warning sign(s) required.
10. Schedule Preventive Maintenance Checks and Services (PMCS).
11. Determine DOL requirements.
12. Determine chemical requirements for hygiene operations.
13. Determine camouflage, concealment, and decoy requirements.
14. Determine security requirements.
15. Determine laundry/shower schedules.
16. Estimate manhour requirements determining number of water support personnel required to support their hygiene mission.
17. Establish operator schedules.
18. Estimate logistical support (truck, forklift, etc.) required.
19. Establish a Bill of Materials (BOM) including security, camouflage, environmental, and safety items.
20. Establish a Course of Action (COA).
21. Record requirements for input into the Operation Order.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 09406-15 Grounding Procedures for Electromagnetic Interference

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**1171-XENG-2535:** Develop field waste water disposal plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Plan requiring a Base Camp(s), area map, area reconnaissance report, camp layout(s) with water source and distribution points indicated, known soil type(s), and references.

**STANDARD:** So that the Commander's intent, goals, and objectives are supported; with field waste water disposal site(s) annotated on the camp layout(s) and a Course of Action (COA) established; with time lines listing equipment and personnel requirements for safe and efficient set up, operation, and maintenance for the duration of the mission; and retrograde.

**PERFORMANCE STEPS:**

1. Review the Operation Plan, map, reconnaissance report(s), camp layout(s), and references.
2. Identify locations of purification equipment, hygiene equipment, and missing facilities.
3. Determine soil absorption rates.
4. Identify potential impact of weather/climate on soakage pits.
5. Identify numbers of personnel supported by facilities.
6. Determine the amount of waste water that will be generated.
7. Determine environmental impacts.
8. Plot container/soakage pit site(s) on camp layout(s) making provisions for traffic.
9. Determine risks conducting operational risk assessments.
10. Determine number and type of warning signs required.
11. Determine camouflage, concealment, and decoy requirements.
12. Estimate manhour requirements determining number of water support personnel required to install, maintain, and close soakage pits.
13. Determine cleaning/inspection schedule.
14. Estimate logistical support (truck, forklift, etc.) required.
15. Establish a Bill of Materials (BOM) including camouflage, environmental, and safety items.
16. Establish a Course of Action (COA).
17. Record requirements for input into the Operation Order.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
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**1171-XENG-2536:** Direct field water purification/storage/distribution system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.

5. Supervise the field water purification/storage/distribution system installation.
6. Inspect installed field water purification/storage/distribution system.
7. Ensure inspection of installed system by preventive medicine personnel.
8. Brief recovery crew.
9. Supervise the field water purification/storage/distribution system recovery.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
  2. FM 10-52 Water Supply in Theaters of Operation
  3. FM 10-52-1 Water Supply Point Equipment and Operations
  4. FMFRP 0-55 Desert Water Supply
  5. NAVMED P-5010 Navy Sanitation
  6. TM 9406-15 Grounding Procedures
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**1171-XENG-2537:** Direct field hygiene equipment installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Supervise the field hygiene equipment installation.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
  2. FM 21-10 Field Hygiene and Sanitation
  3. FM 21-10-1 Unit Field Sanitation
  4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  5. FM 5-163 Sewerage
  6. NAVMED P-5010 Navy Sanitation
  7. TM 9406-15 Grounding Procedures
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**1171-XENG-2538:** Direct camp sanitation system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief installation crew.
5. Supervise installation of sanitation system components.
6. Inspect installed sanitation system.
7. Ensure inspection of installed system by preventive medicine personnel.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation

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**1171-XENG-2539:** Direct field water purification/storage/distribution system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, hygiene equipment, operators, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Reports, and camp layout.
2. Inspect the installed water purification/storage/distribution system.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor the operation of water purification/storage/distribution system.
8. Monitor operation of water purification equipment.

9. Monitor operation of forward area water point supply systems.
10. Monitor operation of six-con module systems.
11. Monitor operation of water pump assemblies.
12. Monitor operation of mobile water chillers.
13. Monitor use of collapsible tanks and bladders.
14. Ensure water quantity and quality meet requirements.
15. Ensure all water production reports and logs are completed and submitted.
16. Supervise water purification/storage/distribution equipment operator maintenance.
17. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 09406-15 Grounding Procedures for Electromagnetic Interference
8. TM 4700-15/1H Ground Equipment Record Procedures
9. UNIT SOP Unit's Standing Operating Procedures

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**1171-XENG-2540:** Monitor water test equipment measurements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given water test equipment and references.

**STANDARD:** To ensure continuous safety of the water supply for the unit per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Test the water.
3. Take necessary actions to improve product water quality.

**REFERENCES:**

1. FM 10-52-1 Water Supply Point Equipment and Operations
2. TB MED 577 Occupational and Environmental Health Sanitary Control and Surveillance of Field Water Supplies
3. TM 10-6630-222-12&P Water Quality Analysis Set-Purification

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**1171-XENG-2541:** Direct field hygiene equipment operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, field hygiene equipment, personnel, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect the installed hygiene equipment.
3. Review safety concerns.
4. Review environmental concerns.
5. Establish operator schedule.
6. Brief personnel.
7. Monitor operation of bare base laundry facilities.
8. Monitor operation of bare base shower facilities.
9. Monitor operation of water heaters.
10. Ensure drainage system is functioning properly.
11. Ensure that daily sanitation standards are met.
12. Supervise hygiene equipment operator maintenance.
13. Ensure records/reports are updated/completed.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 09406-15 Grounding Procedures for Electromagnetic Interference
8. TM 4700-15/1H Ground Equipment Record Procedures
9. UNIT SOP Unit's Standing Operating Procedures

---

**1171-XENG-2542:** Direct camp sanitation system operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp sanitation system, personnel, and references.

**STANDARD:** To support the unit mission per the references.



**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Inspect components of the camp sanitation system.
3. Review safety concerns.
4. Review environmental concerns.
5. Coordinate with Preventive Medicine.
6. Monitor operation of camp sanitation system.
7. Identify components needing cleaning/repair/closure.
8. Brief personnel.
9. Monitor system maintenance.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. UNIT SOP Unit's Standing Operating Procedures

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**1171-XENG-2543:** Direct field water purification/storage/distribution system recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, Water Reconnaissance Report, and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Inspect installed field water purification/storage/distribution system.
5. Ensure inspection of installed system by preventive medicine personnel.
6. Brief recovery crew.
7. Supervise the field water purification/storage/distribution system recovery.

**REFERENCES:**

1. EM 0077 Water Purification, Supply, and Related Equipment.
2. FM 10-52 Water Supply in Theaters of Operation
3. FM 10-52-1 Water Supply Point Equipment and Operations
4. FMFRP 0-55 Desert Water Supply

5. NAVMED P-5010 Navy Sanitation
6. TM 9406-15 Grounding Procedures

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**1171-XENG-2544:** Direct field hygiene equipment recovery

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order and camp layout.
2. Review safety requirements.
3. Review environmental requirements.
4. Brief recovery crew.
5. Supervise the field hygiene equipment recovery.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation
7. TM 9406-15 Grounding Procedures

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**1171-XENG-2545:** Direct camp sanitation system recovery/closure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With an Operation Order, camp layout, equipment, personnel, and references.

**STANDARD:** To support the unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the Operation Order, environmental impact report, and camp layout.

2. Review safety requirements.
3. Review environmental requirements.
4. Brief recovery/closure crew.
5. Supervise sanitation system recovery/closure.
6. Supervise marking of closed sanitation system.
7. Inspect closed/marked sanitation system.
8. Ensure inspection of closed/marked system by preventive medicine personnel.
9. Ensure closed latrine sites are recorded on area map.
10. Forward marked map to those concerned.

**REFERENCES:**

1. EM 0127 Laundry, Bath, and Hygiene Equipment
2. FM 21-10 Field Hygiene and Sanitation
3. FM 21-10-1 Unit Field Sanitation
4. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
5. FM 5-163 Sewerage
6. NAVMED P-5010 Navy Sanitation

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**1171-XENG-2546:** Develop a rear area security plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** At a remote equipment site and given a scenario.

**STANDARD:** To provide physical security from enemy threats for both personnel and equipment.

**PERFORMANCE STEPS:**

1. Assess the site for avenues of approach.
2. Determine how to limit the number of avenues of approach.
3. Determine the location of security check points.
4. Determine lanes of fire.

**REFERENCES:**

1. MCRP 5-12.1C Risk Management (Feb 01)
2. MCWP 3-41.1 Rear Area Operations

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**1171-XENG-2547:** Determine maintenance contact team Water Support Technician support requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Chief, Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a requirement to provide maintenance/repairs of water support/hygiene equipment at a forward location.

**STANDARD:** So that the equipment is efficiently and effectively repaired.

**PERFORMANCE STEPS:**

1. Review the requirements.
2. Determine numbers of equipment requiring maintenance/repair.
3. Determine numbers of personnel required to support the quantity of equipment.
4. Review equipment technical manual to determine repair parts requirements.
5. Assemble parts block
6. Assign personnel.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. Appropriate Technical Manuals
- 

**1171-XENG-2604:** Inspect interior plumbing system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With an Operation Plan, a structure with an installed interior plumbing system, tools, local code requirements, and references.

**STANDARD:** So that the ability of the plumbing system to support the mission is determined, safety concerns addressed, and required repairs/upgrades identified.

**PERFORMANCE STEPS:**

1. Review Operation Plan, local code, and references.
2. Find, identify, and record the size, type, and serviceability of pipes.
3. Identify and record the type and serviceability of fixtures and other connected equipment.
4. Determine capabilities/serviceability of the water supply system.
5. Determine capabilities/serviceability of the waste system.
6. Determine serviceability of the vent system.
7. Identify any part of the plumbing system that fails to comply with local code or mission requirements.
8. List all discrepancies identified, specifying any corrective action(s) required.

**REFERENCES:**

1. National Plumbing Code
- 

**1171-XENG-2605:** Design interior plumbing system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With construction plans for a building, a list of plumbing fixtures to be installed, local code requirements, and references.

**STANDARD:** Per the Uniform Plumbing Code (UPC).

**PERFORMANCE STEPS:**

1. Review the construction plans, local code, and the references.
2. Review list of plumbing fixtures/appliances to be installed.
3. Identify plumbing symbols.
4. Determine code requirements.
5. Identify water supply requirements.
6. Identify waste requirements.
7. Identify vent requirements.
8. Plot plumbing system/fixtures on construction plans.
9. Ensure that the interior plumbing system plan conforms to be references and the building's requirements.
10. Identify safety concerns.
11. Establish a Bill of Materials (BOM) including safety items.

**REFERENCES:**

1. FM 100-23-1 Humanitarian Assistance Operations
  2. FM 3-07 Stability Operations and Support Operations
  3. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  4. FM 5-163 Sewerage
  5. FM 5-553 General Drafting
  6. TM 09406-15 Grounding Procedures for Electromagnetic Interference
  7. TM 5-704 Construction Print Reading in the Field
  8. National Plumbing Code
- 

**1171-XENG-2606:** Direct interior plumbing system installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure, blueprints, plumbing plan, personnel, tools, bill of material, materials, and references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Review the blueprints, plumbing plan, and bill of material.
2. Determine safety/code requirements.
3. Inventory bill of material.
4. Brief installation crew.
5. Supervise installation crew.
6. Conduct final inspection of installed plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. FM 5-553 General Drafting
  4. TM 5-704 Construction Print Reading in the Field
  5. TM 9406-15 Grounding Procedures
  6. National Plumbing Code
- 

**1171-XENG-2607:** Direct interior plumbing system repairs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Water Support Technician

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** With a structure requiring interior plumbing system repairs, personnel, tools, materials, and the references.

**STANDARD:** To support unit mission per the references.

**PERFORMANCE STEPS:**

1. Examine the plumbing system needing repairs.
2. Determine safety/code requirements.
3. Determine material requirements.
4. Brief repair crew.
5. Supervise repairs.
6. Conduct inspection of repaired plumbing system.

**REFERENCES:**

1. FM 3-34.471 Plumbing, Pipefitting, and Sewerage
  2. FM 5-163 Sewerage
  3. TM 9406-15 Grounding Procedures
  4. National Plumbing Code
-

ENG & UTIL T&R MANUAL

CHAPTER 10

MOS 1302 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 10

MOS 1302 INDIVIDUAL EVENTS

**10000. PURPOSE.** This chapter includes all individual training events for the Combat Engineer Officer. An individual event is an event that a trained Combat Engineer Officer would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**10001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1302).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**10002. INDIVIDUAL CORE CAPABILITIES 1302**

**1. COMBAT ENGINEER OFFICER - 1302 - Career Progression Philosophy**

Combat Engineer Officers serve in operational Combat Engineer Billets across the MAGTF to include the Combat Engineer Battalion, Engineer Support Battalion, and Marine Wing Support Squadron. The tour length for all ranks is 24-36 months. The order in which an Officer moves through the Engineer community is as follows:



- a. Officers are selected to serve as Combat Engineer Officers upon graduation from The Basic Officer Course.
- b. Combat Engineer Officer Students are trained at Marine Corps Engineer School, Camp Lejeune, NC, in the Combat Engineer Officer Course (CID M03ACC2).
- c. Combat Engineer Officers will be assigned to the operating forces at the Division, Marine Logistics Group or Marine Wing Support Squadron.
- d. After a successful tour in the operating forces, a Combat Engineer Officer will be reassigned to the supporting establishment or a "B" billet for career broadening.
- e. Combat Engineer Captains will also either attend Expeditionary Warfare School or the Captain's Career Engineer Advance Course.
- f. Combat Engineer Officers will then rotate on subsequent tours of duty to other elements of the MAGTF.

2. Billet Description. Combat Engineer Officers are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF COMBAT ENGINEER OFFICERS

Combat Engineer Officers lead/employ engineer personnel and equipment in order to provide assured mobility by conducting obstacle breaching, constructing standard and non-standard line of communication bridges across wet and dry gaps, performing route and area clearance operations, conducting road and route reconnaissance, and repairing damaged airfields; they direct the construction of explosive and non-explosive obstacles, to include minefields, to provide countermobility support to the Operating Force; they enhance the survivability of forces by designing and building bunkers, aircraft hides and revetments, as well as hardening existing structures and positions; and they perform general Engineering tasks to include designing temporary facilities, designing and building concrete and concrete block structures, and designing cantonments. Personnel assigned this MOS are proficient in basic, specialized and expedient demolitions; and explosive, ballistic and mechanical urban breaching techniques. Combat Engineer Officers will also assist/advise the supported unit in the employment of engineer assets.

3. Core Skills. Core skills are those essential skills that enable the Officer to perform as a Combat Engineer Officer. The following core skills are identified for MOS 1302:

- a. Plan engineer missions.
- b. Lead engineer personnel.
- c. Employ/manage engineer equipment and resources.
- d. Advise supported unit on Engineer Employment.

4. Billet Applicability. The basic duties and core skills for the 1302 MOS are the same throughout the operating forces.

**10003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**10004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1302-ADMN-1001:** Supervise unit training

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a unit training plan, time restraints, commander's intent, personnel, and equipment.

**STANDARD:** To meet requirements of the training plan and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Determine mission requirements based on unit missions, Mission Essential Task Lists, Collective Training Events and Individual Training Standards (ITS).
2. Determine current unit capabilities, both individual and unit proficiency.
3. Identify training shortfalls and strengths of unit.
4. Determine specific training objectives to correct shortfalls in accordance with ITSs and METLs.
5. Develop logical sequence for training individual skills, then squad skills, then platoon skills, and company skills.
6. Brief commander on training plan as required.
7. Issue order for training and prepare training schedule utilizing backwards planning.
8. Supervise the coordination of logistical support.

**REFERENCES:**

1. MCRP 3-0 A Unit Training Management Guide
  2. MCRP 3-0B How to Conduct Training
- 

**1302-ADMN-1002:** Advise commander of special considerations for engineer operations in an urban environment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical urban situation, a map, an engineer situation report, commander's intent, concept of operations, and references.

**STANDARD:** Identify the best use of engineer personnel and equipment consistent with the terrain analysis, commander's intent, and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support availability and time, space, and logistics (METT-TSL).
2. Prevent/Coordinate impact of METT-TSL on engineer operations.
3. Brief the status of engineer personnel and equipment.
4. Brief current and future engineer operations.
5. Brief status of Class III, IV, V in relation to engineer operations.
6. Brief impact of Class III, IV, V on engineer operations.
7. Brief engineer Requests for Information (RFI).
8. Recommend special considerations to the commander that his unit should take (Mine/IED/Booby Trap awareness, increased demolition requirements, countermobility efforts, and survivability.)

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 90-13-1 Combined Arms Breaching Operations
6. MCDP 1 Warfighting
7. MCDP 1-3 Tactics
8. MCWP 3-17 Engineer Operations
9. MCWP 3-17.3 MAGTF Breaching Operations
10. MCWP 3-35.3 Military Operations on Urbanized Terrain

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**1302-ADMN-1003:** Develop engineer training plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an engineer unit, training requirements, and references,

**STANDARD:** To sustain engineer operations training in support of the MAGTF per the references.

**PERFORMANCE STEPS:**

1. Determine mission requirements based on unit missions, Mission Essential Task Lists, Collective Training Events and Individual Training Standards (ITS).
2. Determine current unit capabilities, both individual and unit proficiency.
3. Identify training shortfalls and strengths of unit.
4. Determine specific training objectives to correct shortfalls in accordance with ITSs and MPSS.
5. Develop logical sequence for training individual skills, then squad

- skills, then platoon skills, and company skills.
6. Brief commander on training plan.
  7. Issue order for training and prepare training schedule utilizing backwards planning.
  8. Supervise the coordination of logistical support.

**REFERENCES:**

1. MCRP 3-0 A Unit Training Management Guide
2. MCRP 3-0B How to Conduct Training

---

**1302-ADMN-1004:** Prepare the engineer portion of the operations order

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, commander's intent, concept of operations, and references.

**STANDARD:** To ensure Engineer portions of the Operations Order are consistent with concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Determine mobility, countermobility, survivability, and general engineering.
4. Identify logistical requirements to the S-4/G-4.
5. Develop Engineer Concept of Operations.
6. Develop appropriate engineer appendix, plan, or order.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
2. MCRP 3-17B Engineer Forms and Reports
3. MCWP 4-1 Logistics Operations
4. MCWP 5-1 Marine Corps Planning Process

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**1302-ADMN-1005:** Brief commander on engineer situation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion Commander, Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an engineer situation report, commander's intent, concept of operations, and references,

**STANDARD:** To provide a description of the current engineer situation including a summary of status of current engineer activities, capabilities, and limitations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (MTT-TSL).
2. Brief impact of METT-TSL on engineer operations/impact of engineer operations on METT-TSL.
3. Brief the status of engineer personnel and equipment.
4. Brief current and future engineer operations.
5. Brief status of applicable classes of supply (I (Bulk), III (Bulk), IV, V) in relation to engineer operations.
6. Brief impact of applicable classes of supply (I (Bulk), III (Bulk), IV, V) engineer operations.
7. Brief engineer Requests for Information (RFI).

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. MCRP 3-17B Engineer Forms and Reports
  3. MCWP 5-1 Marine Corps Planning Process
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**1302-ADMN-1006:** Conduct engineer planning

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion Commander, Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ, LTCOL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, commander's guidance, courses of action, an engineer task organization, and references.

**STANDARD:** To utilize engineer personnel and equipment in support of mission requirements per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Plan reconnaissance mission(s).
5. Prepare engineer estimate.
6. Identify mission and support requirements.
7. Develop Concept of Operations.



8. Coordinate external requirements.
9. Determine task organization and command/support relationships.
10. Brief the commander on engineer aspects of courses of action.
11. Submit required engineer reports.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. MCRP 3-17A Engineer Field Data
3. MCWP 5-1 Marine Corps Planning Process

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**1302-CMOB-1007:** Prepare an obstacle plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalion Commander, Battalion/Squadron Executive Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ, LTCOL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, construction materials and appropriate references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**PERFORMANCE STEPS:**

1. Coordinate obstacle construction/emplacement operations.
2. Plan obstacle construction/emplacement operations.
3. Construct explosive obstacles.
4. Construct nonexplosive obstacles.
5. Conduct engineer reconnaissance.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. FM 5-250 Explosives and Demolitions
4. FM 5-34 Engineer Field Data - Field Expedient Charges
5. FM 90-7 Combined Arms Obstacle Integration
6. MCRP 3-17A Engineer Field Data
7. MCRP 3-17B Engineer Forms and Reports

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**1302-CMOB-1008:** Plan the emplacement of an obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, an obstacle plan overlay, personnel, equipment, and references,

**STANDARD:** To meet the requirements of the obstacle plan per the references.

**PERFORMANCE STEPS:**

1. Analyze requirements outlined in the obstacle plan and conduct a site reconnaissance.
2. Task organize personnel and equipment.
3. Identify logistical requirements.
4. Coordinate security with supported maneuver elements as required.
5. Coordinate obstacle overwatch and coverage by fires with supported unit.
6. Verify the obstacle is effective based on the principles of obstacle employment.
7. Monitor construction/installation of the obstacle.
8. Submit required engineer reports.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. MCRP 3-17A Engineer Field Data
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**1302-CMOB-1009:** Plan construction of obstacles in an urban environment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation in an urban environment, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze requirements outlined in the obstacle plan.
2. Conduct a site reconnaissance.
3. Select appropriate obstacle type according to threat.
4. Plan for concertina or razor wire obstacle construction on pavement.
5. Identify non-traditional/expedient methods of obstacle construction.
6. Task organize personnel and equipment.
7. Identify logistical requirements.

8. Coordinate security with supported maneuver elements as required.
9. Submit required engineer reports.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-102 Countermobility
4. FM 90-7 Combined Arms Obstacle Integration
5. MCDP 1-3 Tactics
6. MCRP 3-17A Engineer Field Data
7. MCRP 3-17B Engineer Forms and Reports
8. MCWP 3-17 Engineer Operations
9. MCWP 3-35.3 Military Operations on Urbanized Terrain

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**1302-CMOB-1010:** Plan construction of vehicle checkpoints as a part of an urban countermobility plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation in an urban environment, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Identify Requests for Information (RFI) to the S-2/G-2.
3. Conduct a site reconnaissance.
4. Develop obstacle/barrier plan as required to prevent bypass of the checkpoint.
5. Design vehicle checkpoint to provide holding areas, personnel holding areas, search areas, active vehicle barriers, and overwatch positions.
6. Develop bill of materials.
7. Task organize personnel and equipment.
8. Identify logistical requirements.
9. Coordinate security with supported maneuver elements as required.
10. Estimate construction time.
11. Generate sketches as required.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-103 Survivability

3. MCRP 3-17A Engineer Field Data
4. MCWP 3-35.3 Military Operations on Urbanized Terrain

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**1302-CMOB-1011:** Advise commander on countermobility operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, concept of operations, commander's intent, task organization of personnel and equipment, and references.

**STANDARD:** To identify the best use of engineer personnel and equipment consistent with the countermobility analysis, commander's intent, and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Brief commander on Requests for Information (RFI).
2. Brief commander on modified combined obstacle overlay.
3. Brief commander on recommended barrier/obstacle plan.
4. Brief commander on effects of terrain and weather on the enemy's ability to maneuver.
5. Brief commander on engineer estimates of supportability.
6. Identify logistical shortfalls to S-4/G-4.
7. Develop scheme of obstacle overlay, as required.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 34-130 Intelligence Preparation of the Battlefield
3. FM 5-102 Countermobility
4. FM 5-170 Engineer Reconnaissance
5. FM 90-7 Combined Arms Obstacle Integration
6. FMFM 13 MAGTF Engineer Operations
7. MCWP 3-1 Ground Combat Operations
8. MCWP 5-1 Marine Corps Planning Process

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**1302-CMOB-1012:** Supervise the construction of an obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, an obstacle plan overlay, personnel, equipment and references.

**STANDARD:** To meet the requirements of the obstacle plan per the references

**PERFORMANCE STEPS:**

1. Analyze requirements outlined in the obstacle plan and conduct a site reconnaissance
2. Task organize personnel and equipment
3. Identify logistical requirements
4. Coordinate security with supported maneuver elements as required
5. Coordinate obstacle overwatch and coverage by fires with supported unit.
6. Verify the obstacle is effective based on the principles of obstacle employment
7. Monitor construction/installation of the obstacle
8. Submit required Engineer reports

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17410 Maneuver/Training Area, Light Forces

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**1302-CMOB-1013:** Prepare an obstacle plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, commander's intent, and references.

**STANDARD:** To utilize engineer personnel and equipment consistent with the commander's intent and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Provide guidance for location and intent of obstacles to the S-3.
5. Identify logistics requirements to the S-4.
6. Identify and prioritize fire support requirements.
7. Prepare an obstacles plan appendix to operations order and overlay.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FM 5-102 Countermobility
  3. FM 90-7 Combined Arms Obstacle Integration
  4. FMFM 13 MAGTF Engineer Operations
  5. FMFM 3-1 Command and Staff Action
  6. MCDP 1 Warfighting
  7. MCDP 1-3 Tactics
  8. MCRP 3-17B Engineer Forms and Reports
  9. MCWP 3-1 Ground Combat Operations
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**1302-CMOB-1014:** Perform countermobility analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, courses of action, commander's intent, and references.

**STANDARD:** To identify factors affecting the momentum of enemy maneuver elements per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB), including preparation of a modified combined obstacle overlay (MCOO).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Conduct engineer reconnaissance as required.
5. Prepare an engineer estimate of supportability.
6. Identify the maneuver units requiring countermobility support.
7. Identify and prioritize engineer countermobility tasks.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 34-130 Intelligence Preparation of the Battlefield
  3. FM 5-100 Engineers in Combat Operations
  4. FM 5-102 Countermobility
  5. FM 5-170 Engineer Reconnaissance
  6. FM 90-7 Combined Arms Obstacle Integration
  7. FMFM 13 MAGTF Engineer Operations
  8. MCWP 3-1 Ground Combat Operations
  9. MCWP 5-1 Marine Corps Planning Process
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**1302-DEMO-1017:** Conduct emergency destruction of Captured Enemy Ammunition (CEA)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Without Explosive Ordnance Disposal (EOD) support readily available, given a tactical scenario, commander's intent, map, explosives, CEA, and references.

**STANDARD:** Successfully destroying the CEA in accordance with the commander's intent and the references.

**PERFORMANCE STEPS:**

1. Positively identify captured enemy ammunition.
2. Determine minimum safe distance.
3. Coordinate with higher headquarters.
4. Destroy CEA.
5. Evaluate results.
6. Report results to higher headquarters.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. GTA 5-10-33 Demolition Card
  3. MCWP 3-17 Engineer Operations
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**1302-DEMO-1018:** Prepare a demolition target folder

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, a demolition target, a completed DA form 2203-R (Demolition Reconnaissance Record), a photograph of the target, and the references.

**STANDARD:** To provide all of the detail necessary to destroy the targets per the references.

**PERFORMANCE STEPS:**

1. Analyze the information from the DA 2203-R.
2. Determine the placement of the explosives on the target.
3. Determine the amount of explosives required to achieve the desired effect and limit collateral damage.

4. Determine task organization of personnel and equipment and the required demolition tools and accessories.
5. Determine the organization for the demolition guard.
6. Determine minimum safe distances for equipment and personnel.
7. Determine the amount of time it will take to prepare the target for demolition.
8. Complete the obstacle folder, STANAG 2123.

**RELATED EVENTS:**

1302-DEMO-1023                      1302-DEMO-1022

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Map, a photograph of the target, note taking gear

**MATERIAL:** DA Form 2203-R

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-DEMO-1019:** Engage targets with expedient demolitions

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, a designated area, personnel, demolition tools, explosives, improvised materials, and references.

**STANDARD:** To produce the desired effect on the target per the references.

**PERFORMANCE STEPS:**

1. Review the mission.
2. Construct a platter charge.
3. Construct an expedient claymore charge.
4. Construct a grape shot directional charge.
5. Construct an omni (360 degree) charge.
6. Construct expedient shaped charge.
7. Construct expedient flame mine.
8. Construct a purpose built charge, based on mission requirements.
9. Engage the target.



**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
2. FM 5-250 Explosives and Demolitions

**SUPPORT REQUIREMENTS:**

**ORDNANCE:**

<u>DODIC</u>	<u>Quantity</u>
MN08 Igniter, Time Blasting Fuse with Sho	
M130 Cap, Blasting Electric M6	
M131 Cap, Blasting Non-Electric M7	
M456 Cord, Detonating PETN Type I Class E	
M670 Fuse, Blasting Time M700	
M757 Charge, Assembly Demolition M183 Com	
M766 Igniter, M60 for Time Blasting Fuse	

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**EQUIPMENT:** Kevlar helmet, flak vest, Squad Demolition Kit, hearing protection, firing device (MK152 remote firing device, CD450-4J blasting machine), AN/PRC 119

**UNITS/PERSONNEL:** Range safety officer, corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-DEMO-1020:** Detonate demolitions

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, demolition target, demolitions, demolition tools, and references.

**STANDARD:** To produce the desired effect on the target per the references.

**PERFORMANCE STEPS:**

1. Review target folder, if available.
2. Conduct target reconnaissance to obtain critical dimensions necessary for charge calculations and firing point location.
3. Determine type of explosive to use.
4. Select formula calculation for single charge.
5. Determine number of charges/total amount of explosives and minimum safe distance.
6. Place the charge(s) on the target.

7. Prime the target.
8. Tamp as required.
9. Detonate the explosive(s).
10. Conduct battle damage assessment.
11. Submit required engineer reports.

**RELATED EVENTS:**

1302-DEMO-1018                      1302-DEMO-1023                      1302-DEMO-1022

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**ORDNANCE:**

<u>DODIC</u>	<u>Quantity</u>
MN08 Igniter, Time Blasting Fuse with Sho	
M982 Charge, Demolition Sheet 0.161 Inch	
MM30 Charge, Flexible 20 Gram PETN MK140	
MM45 Charge, Demolition Flexible Linear S	
MM44 Charge, Demolition Flexible Linear S	
MM47 Charge, Demolition Flexible Linear S	
MM56 Detonator, Non-Electric MK123 Mod 0	
MM48 Charge, Demolition Flexible Linear S	
M028 Demolition Kit, Bangalore Torpedo M1	
M130 Cap, Blasting Electric M6	
M032 Charge, Demolition Block TNT 1-Pound	
M039 Charge, Demolition Cratering 40-Poun	
M131 Cap, Blasting Non-Electric M7	
M420 Charge, Demolition Shaped M2 Series	
M456 Cord, Detonating PETN Type I Class E	
M591 Dynamite, Military M1	
M670 Fuse, Blasting Time M700	
M757 Charge, Assembly Demolition M183 Com	
M766 Igniter, M60 for Time Blasting Fuse	

**EQUIPMENT:** Kevlar helmet, flak vest, Squad Demolition Kit, hearing protection, firing device (M34, MK152 remote firing device , CD450-4J blasting machine, AN/PRC 119

**UNITS/PERSONNEL:** Range safety officer, corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-DEMO-1021:** Perform target analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, a demolition target, a completed DA form 2203-R or STANAG 2123, a photograph of the target, and the references.

**STANDARD:** To provide all of the detail necessary to destroy the target per the references.

**PERFORMANCE STEPS:**

1. Analyze the information from the DA form 2203-R or STANAG 2123.
2. Determine the placement of the explosives on the target.
3. Determine the amount of explosives required to achieve the desired effect.
4. Determine task organization of personnel and equipment and the required demolition tools and accessories.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports
4. STAGNAG 2017 Demolition Order
5. STANAG 2123 Obstacle Folder
6. TC 5-6-14 How to Prepare a Target Folder

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**1302-DEMO-1022:** Supervise demolition operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, the commander's intent, a demolitions plan, equipment and personnel, and the references.

**STANDARD:** To execute the commander's intent and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Review the demolition plan.
2. Validate quantity and type of demolition required.
3. Task organize personnel and equipment.
4. Issue the order.
5. Plan and conduct mission rehearsal.

6. Conduct demolition mission.
7. Submit engineer reports as required.

**RELATED EVENTS:**

1302-DEMO-1023

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
2. FMFM 13 MAGTF Engineer Operations
3. MCRP 3-17A Engineer Field Data
4. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Kevlar Helmet, Flak vest, Squad Demolitions Kit, hearing protection, firing device (M34, MK152 remote firing device, CD450-4J blasting machine), AN/PRC 119, map, note taking gear

**MATERIAL:** DA Form 2203-R

**UNITS/PERSONNEL:** range safety officer, corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-DEMO-1023:** Plan for demolition operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, commander's intent, equipment and personnel, and the references.

**STANDARD:** To execute a demolition mission in support of the commander's intent and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available; and time, space, and logistics (METT-TSL).
2. Determine the amount of explosives required to achieve the desired effect.
3. Identify demolitions targets based on commander's intent.
4. Direct demolition reconnaissance as required.
5. Analyze required information from the DA Form 2203-R.
6. Complete the demolition target folder.
7. Estimate the logistics required based on the demolition reconnaissance.
8. Determine task organization of personnel and equipment.

9. Prioritize targets based on commander's intent.
10. Complete Directed and/or Situational Obstacle matrices and overlays, as required.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
2. FMFM 13 MAGTF Engineer Operations
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** MAP, DA Form 2203-R, NOTE TAKING GEAR

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**1302-MANT-1024:** Manage an organizational maintenance program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an engineer task organization of equipment and personnel, equipment technical manuals, and references.

**STANDARD:** To ensure equipment and maintenance records are maintained per the references.

**PERFORMANCE STEPS:**

1. Ensure proper manuals and forms are available.
2. Ensure personnel are trained in proper procedures.
3. Ensure required maintenance is performed and documented.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. Appropriate Equipment Manual
  4. Appropriate Technical Manuals
- 

**1302-MANT-1025:** Manage maintenance management reports and records

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given appropriate maintenance reports and references,

**STANDARD:** To identify discrepancies and processing errors within the maintenance cycle.

**PERFORMANCE STEPS:**

1. Review reports for discrepancies within the maintenance and supply cycle.
2. Review reports transaction for processing errors.
3. Inspect reports for compliance with references.
4. Review supply requests to identify any discrepancies.
5. Conduct reconciliation with MMO and supply.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. UM 4790-5 Users Manual MIMMS
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**1302-MOBL-1026:** Classify a bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, a bridge, and references.

**STANDARD:** To determine the military load classification with consideration to width and overhead clearance restrictions.

**PERFORMANCE STEPS:**

1. Receive mission order including vehicle requirements.
2. Coordinate support/security requirements with supported units.
3. Prepare bridge reconnaissance team and all applicable forms and reports.
4. Conduct bridge reconnaissance.
5. Make appropriate calculations.
6. Determine bridge classification/restrictions.

**REFERENCES:**

1. FM 5-446 Military Non-Standard Fixed Bridges
  2. GTA 5-7-13 Bridge Classification Booklet
  3. MCRP 3-17A Engineer Field Data
  4. MCRP 3-17B Engineer Forms and Reports
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**1302-MOBL-1027:** Plan the reduction of strongpoints and structures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, a designated area, personnel, demolitions tools, explosives, improvised materials, heavy equipment, and references.

**STANDARD:** So that the strongpoint or structure is reduced with minimal/no damage to friendly equipment or personnel.

**PERFORMANCE STEPS:**

1. Review the mission and reconnaissance reports.
2. Organize demolition team.
3. Identify location of target.
4. Evaluate the target and surrounding areas.
5. Select and/or construct appropriate means of reduction.
6. Determine possible effects of reduction on target and surrounding structures.
7. Determine possible effects on the assault team and friendly forces.
8. Identify safety precautions required during reduction.
9. Brief team members on safe locations.
10. Position yourself and your team in a safe location during reduction.
11. Suppress enemy fire and setup site security.
12. Obscure target from enemy observation.
13. Mark areas for safe transit/ occupation by friendly forces.
14. Reduce strongpoint or structure.
15. Coordinate transfer of control of reduction site to follow-on/ designated force.
16. Submit required reports.

**REFERENCES:**

1. FM 5-101 Mobility
2. FM 5-250 Explosives and Demolitions
3. FM 5-434 Earthmoving Operations
4. MCRP 3-17A Engineer Field Data
5. MCWP 3-17.3 MAGTF Breaching Operations
6. MCWP 3-35.3 Military Operations on Urbanized Terrain

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**1302-MOBL-1028:** Conduct hasty mobility operations in an Improvised Explosive Device (IED) environment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** In a combat environment, with Explosive Ordnance Disposal (EOD) support unavailable within mission parameters, given relevant combat engineer T/E, appropriate Class V items, and references.

**STANDARD:** To ensure mobility per the commander's intent and the references.

**PERFORMANCE STEPS:**

1. Conduct Intelligence Preparation of the Battlefield (IPB) in a IED environment.
2. Plan immediate actions for mobility operation.
3. Conduct immediate actions.
4. Conduct breaching actions.
5. Submit required reports.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 34-130 Intelligence Preparation of the Battlefield
  3. FM 5-101 Mobility
  4. FM 5-250 Explosives and Demolitions
  5. MCWP 3-17.4 Engineer Reconnaissance
  6. MCWP 3-35.3 Military Operations on Urbanized Terrain
- 

**1302-MOBL-1029:** Design a ribbon bridge/raft

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, task organization of equipment and personnel, and references.

**STANDARD:** To ensure design standards are met to support the concept of operation's traffic per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Conduct reconnaissance of ribbon bridge/raft site.
3. Determine site condition and layout.
4. Determine logistical support requirements for ribbon bridge construction.
5. Determine engineer estimate of supportability.
6. Determine configuration of the ribbon bridge/raft to be utilized.
7. Review the ribbon bridge/raft design.
8. Coordinate suppression of enemy force overwatching the crossing area.
9. Establish safety plan.
10. Coordinate obscuration of the crossing site.
11. Ensure crossing site is secure prior to bridge construction, for all crossings except for an assault crossing.
12. Cross gap, using appropriately designed bridge.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations



2. MCRP 3-17A Engineer Field Data
  3. MCWP 3-17.1 River-Crossing Operations
  4. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)
- 

**1302-MOBL-1030:** Perform mobility analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, courses of action, and references.

**STANDARD:** To identify factors affecting the mobility of maneuver elements on the battlefield due to enemy, terrain, obstacles, and weather.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify intelligence requirements to the S-2/G-2.
4. Determine the need for engineer reconnaissance.
5. Prepare an engineer estimate of supportability.
6. Identify the maneuver units that will require mobility support.
7. Identify quantity and prioritize engineer mobility tasks.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
  2. FM 5-100 Engineers in Combat Operations
  3. FM 5-101 Mobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 90-13-1 Combined Arms Breaching Operations
  6. FMFM 13 MAGTF Engineer Operations
  7. MCWP 3-1 Ground Combat Operations
- 

**1302-MOBL-1031:** Supervise construction of a non-standard bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, task organization of equipment and personnel, bridge construction design, and references.

**STANDARD:** To ensure design standards are met to support the concept of operations/traffic, per the references.

**PERFORMANCE STEPS:**

1. Review the nonstandard bridge design.
2. Develop construction management tool.
3. Determine logistical support requirements.
4. Issue the order.
5. Establish site layout.
6. Enforce construction techniques.
7. Coordinate security, as required.
8. Update schedule to maximize productivity.
9. Coordinate engineer support, as required.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. MCRP 3-17B Engineer Forms and Reports

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**1302-MOBL-1032:** Design a non-standard bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander

**GRADES:** CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, commander's intent, a gap, military load requirements, and references,

**STANDARD:** To meet or exceed the military load classification required to support the concept of operations/traffic per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available and time, space and logistics (METT-TSL).
2. Conduct site reconnaissance.
3. Determine bridge type.
4. Determine superstructure type.
5. Determine substructure type.
6. Determine bill of materials.
7. Coordinate support requirements.
8. Illustrate final design.
9. Submit design.

**REFERENCES:**

1. FM 5-446 Military Non-Standard Fixed Bridges
  2. MCRP 3-17A Engineer Field Data
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**1302-MOBL-1033:** Supervise rapid runway repair

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, commander's intent, an airfield/landing zone requiring repair, personnel and equipment, and references.

**STANDARD:** To restore the airfield to minimum operational capability per the commanders intent and the references.

**PERFORMANCE STEPS:**

1. Provide recommendations to the Survival Recovery Staff for the task organization of personnel and equipment.
2. Determine the appropriate Foreign Object Debris (FOD) cover requirements.
3. Calculate the material requirements for crater repair based on crater size.
4. Calculate the material requirements for spall repair based on spall size.
5. Identify appropriate dispersal areas for equipment, materials, and personnel in the event of follow-on attacks.
6. Submit appropriate engineer reports.

**REFERENCES:**

1. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  2. MCRP 3-17A Engineer Field Data
- 

**1302-MOBL-1034:** Supervise construction of a forward operating base (airfield/landing zone)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, operations order, commander's intent, airfield configuration, personnel, equipment, construction plan, and references.

**STANDARD:** To meet requirements of the construction plan per the references.

**PERFORMANCE STEPS:**

1. Analyze the construction plan and directive to determine the exact requirements.
2. Task required personnel and equipment.
3. Develop construction management tool.
4. Issue the order.
5. Coordinate required logistical support.
6. Enforce quality control of earthwork and matting emplacement.
7. Update construction schedule to maximize productivity.
8. Submit appropriate engineer reports.

**REFERENCES:**

1. FM 5-412 Project Management
  2. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  3. FM 5-434 Earthmoving Operations
  4. MCWP 3-17 Engineer Operations
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**1302-MOBL-1035:** Conduct assault breaching into buildings

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, a designated area, personnel, demolitions tools, explosives, improvised materials, and references.

**STANDARD:** To penetrate 100% of the target while limiting the amount of collateral damage in accordance with the commander's intent.

**PERFORMANCE STEPS:**

1. Review the mission and reconnaissance reports.
2. Organize the breaching team.
3. Identify the location of the target.
4. Evaluate the target and surrounding areas.
5. Select and construct appropriate explosives for the designated target.
6. Determine possible effects of detonation on the target and surrounding structures.
7. Determine possible effects on the assault team.
8. Identify safety precautions required during detonation.
9. Compute Net Explosive Weight (NEW).
10. Computer standoff distance.
11. Brief team members on explosive effects and safe locations.

12. Position yourself and your team in a safe location during detonation.
13. Suppress enemy fire and set up security.
14. Obscure target from enemy observation.
15. Emplace and detonate the charge.
16. Proof breach site ensure adequacy of breach.
17. Mark breach lane, as required.
18. Pass assault force through the breach site.

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-250 Explosives and Demolitions
  3. MCRP 3-17A Engineer Field Data
  4. MCWP 3-17.3 MAGTF Breaching Operations
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**1302-MOBL-1036:** Supervise repair of a forward operating base (airfield/landing zone)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a forward operating base to be repaired, an operations order, commander's intent, personnel, equipment, and references.

**STANDARD:** To restore the forward operating base to optimum operational capability per the references.

**PERFORMANCE STEPS:**

1. Determine the type and extent of repair required.
2. Determine the task organization of personnel and equipment.
3. Determine material required to complete the repair.
4. Issue the repair order.
5. Inspect completed repair.
6. Submit appropriate engineer reports.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  2. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
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**1302-MOBL-1038:** Plan route sweep operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

29 May 07

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a route to be swept, map, task organized personnel and equipment, commander's intent, an operations order, and references.

**STANDARD:** To ensure sufficient mobility is planned to support the concept of operations and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Determine the most likely areas to be mined, booby-trapped or have improvised explosive devices.
3. Identify common signs and markings that may be associated with the location of mines, IEDs, and booby traps.
4. Determine type and extent of mines/obstacles/IEDs.
5. Determine task organization of personnel and equipment.
6. Determine material requirements.
7. Determine Explosive Ordnance Disposal (EOD) support.
8. Develop route sweep order.
9. Plan mission rehearsals.

**RELATED EVENTS:**

1302-MOBL-2049

1302-MOBL-2053

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-170 Engineer Reconnaissance
3. FMFM 13 MAGTF Engineer Operations
4. MCRP 3-17A Engineer Field Data
5. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** RANGE SAFETY OFFICER, CORPSMAN

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**1302-MOBL-1039:** Plan breaching of complex obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, task organized personnel and equipment, commander's intent, and references.

**STANDARD:** To support the commander's intent and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Identify available bypasses.
3. Identify the type(s) of breaching operation (i. e., bypass, hasty, in-stride, deliberate, assault, or covert/ clandestine) and the number of lanes required to allow the passage of the ground combat element (GCE) and Logistics Combat Element (LCE).
4. Identify and evaluate potential breach sites.
5. Identify Requests for Information (RFI) to the S-2/G-2.
6. Determine number/type of explosive/nonexplosive breaching assets available.
7. Task organize engineer personnel and equipment within the breach force.
8. Determine proper sequencing of the breach force based on tactical situation.
9. Develop battle drills (individual/unit) to rehearse the breach of a complex obstacle.
10. Determine support requirements.
11. Plan, prioritize, and recommend fire support requirement.
12. Prepare appendix of the operations order.
13. Coordinate actions of support force and assault force before, during, and after, planned breaches.
14. Coordinate rehearsals with breach force, and breach, support, and assault forces.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 90-13-1 Combined Arms Breaching Operations
6. FMFM 13 MAGTF Engineer Operations
7. MCWP 3-1 Ground Combat Operations

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**1302-MOBL-1040:** Plan construction of a forward operating base (airfield/landing zone)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, commander's intent, concept of operations, airfield configuration, personnel, equipment, and references.

**STANDARD:** To meet requirements of the commander's intent and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available and time, space, and logistics (METT-TSL).
2. Conduct airfield/landing zone site reconnaissance.
3. Advise commander on site selection.
4. Develop construction plan.
5. Determine task organization of equipment and personnel.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  2. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
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**1302-MOBL-1041:** Advise commander on mobility operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, concept of operations, commander's intent, task organization of equipment and personnel, and the references.

**STANDARD:** To identify the best use of engineer personnel and equipment consistent with the mobility analysis, commander's intent, and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Brief commander on intelligence requirements.
2. Brief commander on modified combined obstacle overlay.
3. Brief commander on effects of terrain and weather and on ability to maneuver.
4. Brief commander on engineer estimates of supportability.
5. Identify logistical shortfalls to S-4/G-4.

**REFERENCES:**

1. FM 5-101 Mobility
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 13-7 MAGTF Breaching Operations
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**1302-RECN-1055:** Plan engineer reconnaissance mission

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, prioritized information requirements, commander's intent, concept of operations, and references.

**STANDARD:** To support the commander's intent and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Determine reconnaissance requirements.
3. Prioritize the Requests for Information (RFI).
4. Issue the warning order.
5. Task organize personnel and equipment.
6. Coordinate security, fire support, and logistical support as required.
7. Issue the order.
8. Conduct rehearsals.
9. Inspect reconnaissance team.
10. Execute reconnaissance mission.
11. Submit reports.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. FMFM 13 MAGTF Engineer Operations
  3. MCRP 3-17B Engineer Forms and Reports
  4. MCWP 5-1 Marine Corps Planning Process
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**1302-RECN-1056:** Conduct engineer reconnaissance mission

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, maps, necessary equipment, a mission order, and references.

**STANDARD:** To ensure the completed reconnaissance mission meets requirements of the mission order per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Determine reconnaissance requirements.
3. Prioritize the Requests for Information (RFI).
4. Issue the warning order.
5. Task organize personnel and equipment.
6. Coordinate security, fire support, and logistical support as required.
7. Issue the order.
8. Conduct rehearsals.
9. Inspect reconnaissance team.
10. Execute reconnaissance mission.
11. Submit reports.

**REFERENCES:**

1. FM 5-101-5-1 Operational Terrain and Symbols
2. FM 5-170 Engineer Reconnaissance
3. GTA 5-2-5 Engineer Reconnaissance
4. MCRP 3-17A Engineer Field Data
5. MCRP 3-17B Engineer Forms and Reports

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**1302-REC-1057:** Conduct engineer reconnaissance in an urban environment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical urban situation, maps, necessary equipment, a mission order, and references.

**STANDARD:** To ensure the completed reconnaissance mission meets requirements of the mission order per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support availability and time, space, and logistics (METT-TSL).
2. Determine reconnaissance requirements.
3. Prioritize the Requests for Information (RFI).
4. Issue the warning order.
5. Task organize personnel and equipment.
6. Coordinate security, fire support and logistical support as required.
7. Issue the order.
8. Conduct rehearsals.
9. Inspect reconnaissance team.
10. Execute reconnaissance mission.
11. Conduct trafficability survey.
12. Determine critical services available.
13. Determine building and infrastructure resources available.
14. Submit reports.

**REFERENCES:**

1. FM 5-101-5-1 Operational Terrain and Symbols
  2. FM 5-170 Engineer Reconnaissance
  3. GTA 5-2-5 Engineer Reconnaissance
  4. MCRP 3-17A Engineer Field Data
  5. MCRP 3-17B Engineer Forms and Reports
  6. MCWP 3-35.3 Military Operations on Urbanized Terrain
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**1302-SURV-1058:** Plan building hardening

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Recommend appropriate structures for survivability positions according to construction type, threat weapons, and available materials/time.
3. Estimate specific effects on a structure of enemy direct and indirect fire weapons.
4. Plan protective measure to harden buildings against weapon effects.
5. Plan for additional structural support of a building to allow for additional load of protective materials and to prevent progressive collapse of an existing structure.
6. Plan fighting positions within an existing structure to allow for employment of infantry weapons from within an enclosed space allowing for backblast, dust control, and minimum arming distances.
7. Plan above ground fighting positions and shelters in instances where digging is not possible.
8. Develop a fire prevention and fire fighting plan.
9. Coordinate survivability/ countermobility plan with supported unit.
10. Develop a countermobility plan that supports the commander's intent (disrupt, fix, turn, block) and prevents enemy access to structures as required.
11. Correct deficiencies/ modify positions/ obstacles to provide better support to supported unit.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-103 Survivability

3. MCRP 3-17A Engineer Field Data
  4. MCWP 3-35.3 Military Operations on Urbanized Terrain
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**1302-SURV-1059:** Prepare a survivability plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, operations order, commander's intent, unit's survivability requirements, and references.

**STANDARD:** To utilize engineer assets consistent with the enemy threat identified commander's intent, and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available and time, space, and logistics (METT-TSL).
2. Conduct intelligence preparation of the battlefield.
3. Identify Request for Information to the S-2/G-2.
4. Identify location of survivability positions.
5. Coordinate with supported unit for coordinating instructions, security, and logistical support.
6. Identify and prioritize survivability requirements.
7. Plan for protective obstacle integration.
8. Task organize engineer equipment and personnel.
9. Plan inspections of survivability positions for proper construction techniques and the level of support afforded to the supported unit.
10. Prepare survivability appendix to operations order.

**REFERENCES:**

1. FM 20-3 Camouflage
2. FM 5-103 Survivability
3. FMFM 3-1 Command and Staff Action
4. MCRP 3-17A Engineer Field Data
5. MCRP 3-17B Engineer Forms and Reports
6. MCWP 3-1 Ground Combat Operations

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Pioneer Platoon kit, Pioneer Squad Kit, 260 CFM, Heavy Equipment.

**MATERIAL:** Tie Wire, barbed wire, engineer stakes, timbers, sandbags, HESCO,

**UNITS/PERSONNEL:** Range Safety Officer, Corpsman, Heavy Equipment and Operators

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-SURV-1060:** Perform survivability analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, courses of action, commander's intent, and references.

**STANDARD:** To identify factors affecting the commander's ability to protect personnel, supplies, and equipment in the battlespace due to terrain, weather, and enemy activity per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Identify Request for Information (RFI) to the S-2/G-2.
3. Conduct engineer reconnaissance as required.
4. Prepare engineer estimate of supportability.
5. Identify and prioritize survivability tasks.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 34-130 Intelligence Preparation of the Battlefield
  3. FM 5-103 Survivability
  4. FMFM 13 MAGTF Engineer Operations
  5. MCRP 3-17B Engineer Forms and Reports
  6. MCWP 3-1 Ground Combat Operations
  7. MCWP 5-1 Marine Corps Planning Process
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**1302-SURV-1061:** Plan construction of blast mitigation measures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To reduce damage to occupied structures while meeting unit requirements outlined in the concept of operations and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Assess the level of protection from varying threats to force protection.
3. Estimate the specific effects on a structure with regard to enemy attack.
4. Recommend appropriate usage of structures depending on construction type and estimated threat.
5. Recommend protective measures to harden against blast effects.
6. Determine the required standoff to mitigate the effects of estimated threats.
7. Apply/recommend the elements of force protection to a proposed site.
8. Coordinate as required with supported commander.
9. Coordinate logistical support, as required.

**REFERENCES:**

1. FM 5-102 Countermobility
  2. FM 5-103 Survivability
  3. MCRP 3-17A Engineer Field Data
  4. MCWP 3-35.3 Military Operations on Urbanized Terrain
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**1302-SURV-1062:** Supervise construction of a survivability position

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, survivability plan, an overlay, operations order, commander's intent, task organized personnel and equipment, and references.

**STANDARD:** To best utilize engineer assets consistent with the survivability plan, commander's intent, and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze survivability plan to determine requirements.
2. Task organize personnel and equipment.
3. Coordinate as required with supported commander.
4. Coordinate logistical support, as required.
5. Issue the order.

6. Submit required engineer reports.
7. Inspect work progress to ensure optimum use of natural cover and concealment.

**REFERENCES:**

1. FM 5-103 Survivability
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Pioneer Platoon kit, Pioneer Squad Kit, 260 CFM

**MATERIAL:** Tie Wire, barbed wire, engineer stakes, timbers, sandbags, HESCO,

**UNITS/PERSONNEL:** Range Safety Officer, Corpsman, Heavy Equipment and Operators

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-SURV-1063:** Advise commander on survivability operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, concept of operations, commander's intent, survivability analysis, task organization of personnel and equipment, and references.

**STANDARD:** To utilize engineer assets consistent with the survivability analysis, commander's intent, and concept of operations per the references.

**PERFORMANCE STEPS:**

1. Brief commander on engineer intelligence requirements.
2. Brief commander on recommended survivability plan.
3. Brief commander on effects of terrain and weather on survivability operations.
4. Brief commander on engineer estimate of supportability.
5. Implement updated commander's guidance/ decisions into survivability plan.
6. Identify logistical requirements/shortfalls to S-4/G-4.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
2. FM 5-103 Survivability

3. FMFM 13 MAGTF Engineer Operations
4. FMFM 3-1 Command and Staff Action
5. MCRP 3-17B Engineer Forms and Reports
6. MCWP 3-1 Ground Combat Operations
7. MCWP 5-1 Marine Corps Planning Process

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**1302-SURV-1064:** Plan construction of a vehicle entry point as a part of a protective barrier plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support availability and time, space, and logistics (METT-TSL).
2. Identify Requests for Information (RFI) to the S-2/G-2.
3. Conduct a site reconnaissance.
4. Determine expected levels of damage to existing structures from enemy bomb blasts.
5. Develop obstacle/barrier plan as required to provide minimum safe standoff distances to protect from bomb blasts.
6. Design entry point to provide vehicle holding areas, personnel holding areas, active vehicle barriers, electric lighting, and over-watch fighting positions.
7. Develop Bill of Materials (BOM).
8. Determine task organization of personnel and equipment.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-103 Survivability
3. MCRP 3-17A Engineer Field Data
4. MCWP 3-35.3 Military Operations on Urbanized Terrain

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**1302-XENG-1066:** Develop mobile electric power distribution plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander



**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, specific number of personnel, equipment, and facilities, and references.

**STANDARD:** To meet or exceed requirements outlined in the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available and time, space, and logistics (METT-TSL).
2. Conduct site reconnaissance.
3. Identify existing electrical power sources.
4. Determine electrical power requirements based on personnel, equipment, and facilities.
5. Determine priorities for electric power.
6. Determine task organization of personnel and equipment to construct and operate the mobile electric power distribution system.
7. Develop a distribution diagram.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** AutoDISE utility planning tool

**UNITS/PERSONNEL:** Utility Officer (1120) or Utilities Chief (1169) will assist

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**1302-XENG-1067:** Design reinforced concrete structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an operations order, commander's intent, construction standards, task organized personnel and equipment, and references.

**STANDARD:** To meet or exceed the requirements of the concept of operations and construction standards per the reference.

**PERFORMANCE STEPS:**

1. Analyze construction standards to determine requirements.
2. Conduct site survey.

3. Determine type of cement/desired concrete characteristics.
4. Determine type and amount of reinforcement.
5. Determine bill of materials.
6. Illustrate final design.

**REFERENCES:**

1. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** tape measure

**MATERIAL:** Calculator, calculation worksheets, blue prints, 16' piece of rebar, 12" X 12" piece of plywood

**UNITS/PERSONNEL:** Engineer Assistant (1361)

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-XENG-1068:** Plan horizontal construction operation (forward operating base/tactical landing zone)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction mission, a map, construction standards, commander's intent, concept of operations, and references.

**STANDARD:** To meet requirements as outlined in the concept of operations and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available, time space and logistics (METT-TSL).
2. Determine Requests for Information (RFI).
3. Conduct site reconnaissance.
4. Perform hasty field identification of soils.
5. Determine drainage requirements.
6. Select appropriate configuration.
7. Determine matting requirements.
8. Compute earthwork volumes.
9. Calculate earthwork production.
10. Determine requirements.
11. Employ construction management tool.
12. Establish quality control plan.

13. Develop maintenance/repair plan.
14. Issue the order.
15. Coordinate as required with supported commander.
16. Coordinate logistical support, as required.
17. Coordinate security, as required.

**REFERENCES:**

1. FM 5-33 Terrain Analysis
  2. FM 5-410 Military Soils Engineering
  3. FM 5-412 Project Management
  4. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  5. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  6. FM 5-434 Earthmoving Operations
  7. NAVAIR 00-80T-115 Expeditionary Airfield NATOPS Manual
  8. NAVAIR 51-60-A-1 Installation, Maintenance, Repackaging and Illustrated Parts Breakdown, AM-2 Airfield Mat and Accessories
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**1302-XENG-1070:** Manage employment of mobile electric power distribution assets

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, specific number of personnel, equipment, and facilities, and references.

**STANDARD:** To meet or exceed requirements outlined in the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct site reconnaissance.
3. Determine priorities for electric power.
4. Determine hours of operation.
5. Coordinate as required with supported commander.
6. Determine task organization of personnel and equipment to construct and operate the mobile electric power distribution system.
7. Coordinate logistical support, as required.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. MCRP 3-17A Engineer Field Data
  3. MCRP 3-17B Engineer Forms and Reports
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**1302-XENG-1071:** Perform general engineering analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, courses of action, commander's intent, and references.

**STANDARD:** To identify factors affecting the commander's ability to sustain personnel, supplies, and equipment in the battlespace due to terrain, weather, enemy activity, and host nation support per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Conduct engineer reconnaissance as required.
5. Prepare engineer estimate of supportability.
6. Identify units requiring general engineering support.
7. Identify and prioritize general engineering tasks in support of commander's intent.
8. Submit required engineer reports.
9. Coordinate as required with supported commander.
10. Coordinate logistical support, as required.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 3-1 Command and Staff Action
  4. FMFM 5-1 Organization and Function of Marine Aviation
  5. MCRP 3-17B Engineer Forms and Reports
  6. MCWP 3-1 Ground Combat Operations
  7. MCWP 4-1 Logistics Operations
  8. MCWP 4-11.6 Bulk Liquid Operations
  9. MCWP 5-1 Marine Corps Planning Process
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**1302-XENG-1072:** Design concrete mix

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given strength specifications, soil analysis, concrete structure design, construction standards, and references.

**STANDARD:** To meet strength specifications described in the concrete structure design and the construction standards per the references.

**PERFORMANCE STEPS:**

1. Determine the type of cement to be used.
2. Select a water:cement ratio.
3. Perform a slump test.

**RELATED EVENTS:**

1302-XENG-1075

**REFERENCES:**

1. FM 5-34 Engineer Field Data - Field Expedient Charges
2. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Slump cone, tape measure, 12"x12" piece of plywood 16'x piece of rebar

**MATERIAL:** Blue prints, calculation worksheets, calculator

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**1302-XENG-1073:** Develop field water distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, specific number of personnel, equipment, and facilities, and references.

**STANDARD:** To meet or exceed requirements outlined in the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops and fire support available and time, space, and logistics (METT-TSL).
2. Conduct site reconnaissance.
3. Identify existing water sources through water point reconnaissance.
4. Determine water consumption based on numbers of personnel, equipment, facilities, and climate conditions.
5. Develop plan for production, purification, storage, and distribution of water (i.e., well drilling, Hypo-chlorination, ROWPU, TWPS.)
6. Plan drainage system to prevent contamination of water source from storm runoff.

7. Plan construction or improvement main supply routes (MSR) from water point and/or well sites.
8. Determine task organization of equipment and personnel to operate the water points and distribution system.
9. Develop a distribution diagram.
10. Coordinate as required with supported commander.
11. Coordinate logistical support, as required.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
2. MCWP 4-11.5 SeaBee Operations in the MAGTF
3. MCWP 4-11.6 Bulk Liquid Operations

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**1302-XENG-1074:** Supervise construction of a reinforced concrete structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a reinforced concrete structure, construction design, construction schedule, task organized equipment and personnel, and references.

**STANDARD:** To meet structure design requirements and the construction schedule per the reference.

**PERFORMANCE STEPS:**

1. Analyze design to determine requirements.
2. Supervise layout.
3. Manage quality control of the construction.
4. Update construction schedule as required.
5. Submit required engineer reports.

**RELATED EVENTS:**

1302-XENG-1067

**REFERENCES:**

1. FM 5-34 Engineer Field Data - Field Expedient Charges
2. FM 5-412 Project Management
3. FM 5-428 Concrete Masonry
4. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** 1361 Engineer Assistant

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-XENG-1075:** Design concrete forms

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given construction standards, concrete structure design, commander's intent, concept of operations, task organized personnel and equipment, and references.

**STANDARD:** To support all dead loads and live loads and meet standards described in the concrete structure design per the references.

**PERFORMANCE STEPS:**

1. Analyze the concrete structure design to determine the type of form.
2. Determine bill of materials.
3. Determine the proper spacing for all components of the form.
4. Illustrate final design.

**REFERENCES:**

1. FM 5-34 Engineer Field Data - Field Expedient Charges
2. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** Blue prints, map, calculation worksheets, calculator, ORM

**UNITS/PERSONNEL:** 1361 Engineer Assistant

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-XENG-1076:** Plan horizontal construction operation (road)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction mission, a map, commander's intent, concept of operations, and references.

**STANDARD:** To meet the construction requirements outlined in the concept of operations per acceptable construction standards and the references.

**PERFORMANCE STEPS:**

1. Analyze mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Determine Requests for Information (RFI).
3. Conduct site reconnaissance.
4. Perform hasty field identification of soils.
5. Determine drainage requirements.
6. Compute Average Daily Traffic (ADT) and Design Hourly Volume (DHV).
7. Establish geometric design controls.
8. Determine structural design.
9. Compute earthwork volumes.
10. Calculate earthwork production.
11. Determine requirements.
12. Employ construction management tool.
13. Establish quality control.
14. Develop maintenance repair plan.
15. Issue the order.
16. Coordinate as required with supported commander.
17. Coordinate logistical support, as required.
18. Coordinate security, as required.

**REFERENCES:**

1. FM 5-410 Military Soils Engineering
2. FM 5-412 Project Management
3. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
4. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
5. FM 5-434 Earthmoving Operations
6. FM 5-530 Materials Testing

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**1302-XENG-1077:** Advise commander on general engineering support

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, concept of operations, commander's intent, task organization of personnel and equipment, and references.

**STANDARD:** To utilize engineer personnel and equipment consistent with the general engineering analysis, commander's intent, and concept of operations per the references.



**PERFORMANCE STEPS:**

1. Brief commander on Requests for Information (RFI).
2. Brief commander on recommended general engineering support.
3. Brief commander on effects of terrain and weather on general engineering operations.
4. Brief commander on engineer estimates of supportability.
5. Brief commander on available non-organic engineer support.
6. Identify logistical requirements to S-4/G-4.
7. Coordinate as required with supported commander.
8. Coordinate logistical support, as required.
9. Coordinate security measures as required.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 3-1 Command and Staff Action
  4. FMFM 5-1 Organization and Function of Marine Aviation
  5. MCWP 3-1 Ground Combat Operations
  6. MCWP 4-1 Logistics Operations
  7. MCWP 4-25.5 Bulk Liquids Operations
  8. MCWP 5-1 Marine Corps Planning Process
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**1302-XENG-1078:** Manage field water distribution system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, a water reconnaissance report (DA 1712-R), specific number of personnel, equipment, and facilities, and references.

**STANDARD:** To meet or exceed requirements outlined in the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Analyze the content of the DA 1712-R.
3. Determine water consumption based on numbers of personnel, equipment, facilities, and climate conditions.
4. Review and approve a plan for production, purification, storage, and distribution of water (i.e., Hypo-chlorination, LMT, ROWPU, TWPS).
5. Determine task organization of equipment and personnel to operate the water points and distribution system.
6. Review and approve a distribution diagram.
7. Coordinate as required with supported commander.
8. Coordinate logistical support, as required.

9. Supervise safety measures taken during operations.
10. Coordinate security measures as required.

**REFERENCES:**

1. FM 10-52 Water Supply in Theaters of Operation
  2. MCWP 4-11.5 SeaBee Operations in the MAGTF
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**1302-XENG-1079:** Plan construction of a forward tactical operations base in an urban environment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, operations order, commander's intent, size of the unit to occupy cantonment, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, logistics (METT-TSL).
2. Conduct a site reconnaissance.
3. Recommend an appropriate site for an operations base.
4. Determine expected levels of damage to existing structures from enemy bomb blasts.
5. Develop obstacle/barrier plan as required to provide minimum safe standoff distances to protect bomb blasts.
6. Determine base layout.
7. Determine host nation support requirements.
8. Determine utility requirements.
9. Determine drainage requirements.
10. Establish blast mitigation measures as required.
11. Establish a survivability plan as required.
12. Determine logistical support requirements.
13. Develop bill of materials.
14. Coordinate as required with supported commander.
15. Determine task organization of personnel and equipment.
16. Coordinate logistical support, as required.
17. Incorporate safety measures used during construction.
18. Coordinate security measures as required.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-103 Survivability
3. MCRP 3-17A Engineer Field Data

4. MCWP 3-17 Engineer Operations
  5. MCWP 3-35.3 Military Operations on Urbanized Terrain
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**1302-XENG-1080:** Plan cantonment layout

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, operations order, commander's intent, size of the unit to occupy cantonment, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Identify Requests for Information (RFI) to the S-2/G-2.
3. Conduct a site reconnaissance.
4. Determine camp layout.
5. Select a temporary facility.
6. Determine logistical support requirements.
7. Determine bill of materials.
8. Determine utility requirements.
9. Determine drainage requirements.
10. Develop obstacle/barrier plan as required
11. Establish a survivability plan as required.
12. Determine task organization of personnel and equipment.
13. Illustrate final design.
14. Coordinate as required with supported commander.
15. Coordinate logistical support, as required.
16. Incorporate safety measures to be taken at the construction site(s).
17. Coordinate security measures as required.
18. Establish a waste disposal plan, as required.
19. Establish an ammunition storage/ distribution, transportation plan, as required.
20. Establish a bulk liquid storage and distribution plan.
21. Establish a facility/ site maintenance and repair plan.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-103 Survivability
3. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
4. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
5. FMFM 13 MAGTF Engineer Operations

6. MCRP 3-17A Engineer Field Data
7. MCWP 4-11.6 Bulk Liquid Operations

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**1302-XENG-1081:** Plan fuel operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, concept of operations, commander's intent, task organization of equipment and personnel, and references.

**STANDARD:** To meet requirements as outlined in the concept of operations and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Plan reconnaissance of selected sites.
3. Determine the fuel shortage and distribution requirements to support the concept of operations.
4. Identify existing fuel sources.
5. Coordinate with appropriate services with the delivery of fuel.
6. Select sites for fuel farms.
7. Plan horizontal construction operations.
8. Determine task organization of equipment and personnel.
9. Illustrate the layout of the fuel farm.
10. Illustrate fuel distribution plan.
11. Maintain record of fuel distribution.
12. Plan/ coordinate fire fighting support.

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. FM 10-67-2 Petroleum Laboratory Testing and Operations
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. FMFM 13 MAGTF Engineer Operations

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Bulk Fuel Officer (1390) or Bulk Fuel Specialist (1391) and Engineer Equipment Officer (1310) or Engineer Equipment Chief (1349)

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**1302-XENG-1082:** Plan a vertical construction project

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, commander's intent, concept of operations, construction standards, task organized personnel and equipment, and references.

**STANDARD:** To meet requirements outlined in the concept of operations and the construction standards per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops, and fire support available and time, space, and logistics (METT-TSL).
2. Determine requests for information (RFI).
3. Conduct site reconnaissance.
4. Determine soil stabilization requirements.
5. Determine drainage requirements.
6. Develop bill of materials (BOM).
7. Determine logistical requirements.
8. Establish a safety plan.
9. Establish quality control program.
10. Coordinate as required with supported commander.
11. Illustrate final design.
12. Coordinate logistical support, as required.
13. Coordinate security measures as required.

**REFERENCES:**

1. FM 5-412 Project Management
2. FM 5-426 Carpentry
3. TM 5-704 Construction Print Reading in the Field

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** Map, calculation worksheets, calculator, blueprints, engineer forms and reports

**UNITS/PERSONNEL:** 1361, Engineer Assistant

**OTHER SUPPORT REQUIREMENTS:** ORM

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**1302-XENG-1083:** Supervise airfield damage repair

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, commander's intent, an airfield/landing zone requiring repair, personnel, equipment, and references.

**STANDARD:** To ensure the airfield is operationally capable in accordance with the references.

**PERFORMANCE STEPS:**

1. Provide recommendations to the Survival Recovery Staff for the task organization of personnel and equipment.
2. Determine the appropriate Foreign Object Debris (FOD) cover requirements.
3. Calculate the material requirements for crater repair based on crater size.
4. Calculate the material requirements for spall repair based on spall size.
5. Identify appropriate dispersal areas for equipment, materials, and personnel in the event of follow-on attacks.
6. Submit appropriate engineer reports.
7. Coordinate as required with supported commander.
8. Coordinate logistical support, as required.
9. Incorporate safety measures to be taken at the construction site(s).
10. Receive reports from damage assessment teams and damage assessment response teams.
11. Repair critical facilities.
12. Establish a sustainable facility/ site maintenance and repair plan in line with commander's repair priorities.

**REFERENCES:**

1. FM 5-34 Engineering Field Data
  2. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
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**10005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1302-CMOB-2015:** Prepare a barrier plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 month

**BILLETS:** Company Commander

**GRADES:** CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an order, task organized equipment and personnel, design specifications, construction materials and appropriate references.

**STANDARD:** To turn, block, fix or disrupt enemy forces in accordance with commander's intent.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-102 Countermobility
  3. FM 5-250 Explosives and Demolitions
  4. FM 5-34 Engineer Field Data - Field Expedient Charges
  5. FM 90-7 Combined Arms Obstacle Integration
  6. MCRP 3-17A Engineer Field Data
  7. MCRP 3-17B Engineer Forms and Reports
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**1302-CMOB-2016:** Coordinate employment of FASCAM Obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, an operations order, and FASCAM delivery resources.

**STANDARD:** Plan the requirements (along with required forms and reports) for the emplacement of hand, artillery, and aviation delivered scatterable minefields.

**PERFORMANCE STEPS:**

1. Analyze requirements outlined in the order and conduct a site/ map/ imagery reconnaissance
2. Determine assets/ timeline necessary to meet obstacle intent (turn, block, fix, disrupt)
3. Identify logistical requirements

4. Coordinate emplacement firing/ delivering units as required
5. Verify the obstacle is effective based on the principles of obstacle employment and the FASCAM decision points identified during planning
6. Monitor construction/installation of the scatterable minefield
7. Submit required Engineer reports
8. Ensure dissemination of the SCATMINEWARN report to affected unit(s)
9. Monitor minefield destruction timeline
10. Ensure common operational picture reflects changes in situational obstacle status.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-102 Countermobility
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17410 Maneuver/Training Area, Light Forces

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**1302-MOBL-2037:** Supervise construction of a pioneer road

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, an operations order, commander's intent, task organization of personnel and equipment, plan for pioneer road, and references.

**STANDARD:** To ensure design standards are met to support the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze plan to determine construction requirements.
2. Task required personnel and equipment.
3. Submit appropriate engineer reports.

**REFERENCES:**

1. FM 5-335 Drainage
  2. FM 5-434 Earthmoving Operations
  3. FM 5-530 Materials Testing
  4. MCRP 3-17A Engineer Field Data
- 

**1302-MOBL-2042:** Direct mobility operations from the high water mark inland

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**BILLETS:** Battalion/Squadron Operations Officer, Company Commander

**GRADES:** CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the commanders intent, location of adjacent friendly forces, estimated locations and most recent activities of enemy, weather conditions, defined area of operations, routes rules of engagement and supporting arms.

**STANDARD:** To achieve force projection and conduct follow-on operations in accordance with the commander's intent per the order.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-100 Engineers in Combat Operations
3. FM 5-101 Mobility
4. FM 5-170 Engineer Reconnaissance
5. FM 5-250 Explosives and Demolitions
6. FM 5-250 Explosives and Demolitions
7. FM 5-34 Engineer Field Data - Field Expedient Charges
8. FM 5-36 Route Reconnaissance and Classification
9. FM 5-553 General Drafting
10. FM 90-13-1 Combined Arms Breaching Operations
11. FMFM 13 MAGTF Engineer Operations
12. FMFM 13-7 MAGTF Breaching Operations
13. FMFM 4-4 Engineer Operations
14. MCRP 3-17B Engineer Forms and Reports
15. MCWP 3-17 Engineer Operations
16. MCWP 3-17.1 River-Crossing Operations
17. MCWP 3-17.3 Breaching Operations
18. MCWP 3-17.3 MAGTF Breaching Operations
19. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
20. TM 09962A-10/1 Operating Instruction Charts MARK 1 MOD 0 Mine Clearance System
21. TM 11275-15/3C Characteristics of Engineering Equipment
22. TM 9-1300-214 Military Explosives
23. UNIT SOP Unit's Standing Operating Procedures

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**1302-MOBL-2043:** Supervise engineer aspects of a river crossing operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, operations order with river crossing annex, commander's intent, and references.

**STANDARD:** To support the commander's intent and the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze order to determine requirements.
2. Task organize personnel and equipment.
3. Coordinate with supported unit commander.
4. Issue orders to engineer personnel.
5. Establish tactical control measures.
6. Coordinate required logistics support.
7. Conduct operations per breaching fundamentals.
8. Coordinate with supported unit.
9. Submit required engineer reports.
10. Coordinate with bridge force, support force, and assault force, as required.

**RELATED EVENTS:**

1302-MOBL-2050

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. MCRP 3-17B Engineer Forms and Reports
3. MCWP 3-1 Ground Combat Operations
4. MCWP 3-17.1 River-Crossing Operations
5. MCWP 5-1 Marine Corps Planning Process

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**1302-MOBL-2044:** Supervise construction of a main supply route

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander

**GRADES:** CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, task organization of equipment and personnel, and references.

**STANDARD:** To ensure construction design requirements are met to support the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Issue the order.
2. Update construction schedule to maximize productivity.
3. Submit appropriate engineer reports.
4. Analyze design to determine requirements.
5. Task required personnel and equipment.
6. Develop construction management tool.
7. Coordinate with supported unit.
8. Coordinate logistical support, as required.
9. Coordinate security, as required.
10. Ensure safety measures are observed to reduce risks during construction.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Engineer Equipment Officer (1310) or Engineer Equipment Chief (1349)

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**1302-MOBL-2045:** Plan a pioneer road

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, task organization of equipment and personnel, and references.

**STANDARD:** To meet or exceed traffic support requirements in the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Conduct reconnaissance of anticipated road.
2. Determine number and type of vehicles to use the road.
3. Recommend road to commander.
4. Determine logistics requirements to support construction.
5. Prepare order to construct pioneer road.
6. Coordinate with supported unit.
7. Coordinate logistical support, as required.
8. Coordinate security, as required.
9. Ensure safety measures are observed to reduce risks during construction.

**REFERENCES:**

1. FM 5-434 Earthmoving Operations
2. FM 5-530 Materials Testing
3. FMFM 13 MAGTF Engineer Operations
4. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Engineer Equipment Officer (1310) or Engineer Equipment Chief (1349)

---

**1302-MOBL-2046:** Supervise construction of a medium girder bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, and a bridge site, task organization of equipment and personnel, and references.

**STANDARD:** To ensure design standards are met to support the concept of operations traffic per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Determine size of required assembly area.
3. Determine site condition and layout.
4. Determine logistical support requirements for MGB construction.
5. Review the MGB design.
6. Establish a safety plan.
7. Set up vehicle for launch/retraction.
8. Coordinate with supported unit.
9. Coordinate logistical support, as required.
10. Coordinate security, as required.
11. Ensure bridge/ crossing site is turned over to designated forces.
12. Submit required reports.

**RELATED EVENTS:**

1302-MOBL-2047

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. TM 5-5420-212-12 Medium Girder Bridge
3. TM 5-5420-212-12-1 Link Reinforcement Set

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-MOBL-2047:** Design a medium girder bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, commander's intent, personnel and equipment, military load classification requirements, and references.

**STANDARD:** To meet or exceed the military load classification required supporting the concept of operation's traffic per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space, and logistics (METT-TSL).
2. Conduct a reconnaissance of the bridge site.
3. Determine configuration of MGB to be utilized.
4. Determine site condition and layout.
5. Develop engineer estimate of supportability.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
  2. TM 5-5420-212-12 Medium Girder Bridge
  3. TM 5-5420-212-12-1 Link Reinforcement Set
- 

**1302-MOBL-2048:** Supervise repair of a pioneer road

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a section of road to be repaired, a frag order, task organized personnel and equipment, and references.

**STANDARD:** To restore the road to minimum operational capability per the references.

**PERFORMANCE STEPS:**

1. Conduct route reconnaissance.
2. Determine type and extent of repairs required.
3. Determine task organization of personnel and equipment.
4. Determine material required to complete repairs.
5. Issue repair orders.
6. Inspect repairs.
7. Submit appropriate engineer reports.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
2. FM 5-434 Earthmoving Operations
3. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Engineer Equipment Officer (1310) or Engineer Equipment Chief (1349)

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**1302-MOBL-2049:** Supervise clearing mines and booby traps

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, information on possible mines, IEDs, booby traps, and other explosive hazards, an area of operations, and references.

**STANDARD:** To ensure that all explosive hazards are cleared from the designated area per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available and time, space, and logistics (METT-TSL).
2. Identify intelligence requirements to the S-2/G-2.
3. Conduct site reconnaissance.
4. Task organize demolition teams.
5. Establish a systemic plan based on priority of occupation for clearing the area.
6. Issue the order.
7. Conduct rehearsals.
8. Breach (Reduce, Proof, Mark) the route.
9. Submit required engineer reports.

**RELATED EVENTS:**

ENGR-MOBL-4803

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-250 Explosives and Demolitions
3. FMFM 13-7 MAGTF Breaching Operations

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** RANGE SAFETY OFFICER, CORPSMAN

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-MOBL-2050:** Plan engineer aspects of river crossing operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, commander's intent, personnel and equipment, and references.

**STANDARD:** To meet requirements of the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available, time space, and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to S-2/G-2.
4. Plan/Conduct reconnaissance to determine potential river crossing sites, staging areas, ingress/egress routes, regulating points, and river profile.
5. Determine support requirements, to include fire support, security, and logistics.
6. Coordinate with supported unit commanders.
7. Complete an overlay with engineer related tactical control measures.
8. Prepare order/appropriate appendix to operations order.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
  2. FM 5-100 Engineers in Combat Operations
  3. FM 5-170 Engineer Reconnaissance
  4. FM 90-13-1 Combined Arms Breaching Operations
  5. FMFM 13 MAGTF Engineer Operations
  6. MCRP 3-17B Engineer Forms and Reports
  7. MCWP 3-1 Ground Combat Operations
  8. MCWP 3-17.1 River-Crossing Operations
  9. MCWP 5-1 Marine Corps Planning Process
- 

**1302-MOBL-2051:** Design a main supply route

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander

**GRADES:** CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a map, an operations order, task organization of personnel and equipment, construction standards, and the reference.

**STANDARD:** To meet or exceed the military load classification required to support the concept of operations traffic per the references.

**PERFORMANCE STEPS:**

1. Determine design life of the road.

2. Determine number and type of vehicles to use the road during its design life.
3. Design the subgrade.
4. Design the base.
5. Determine compaction requirements for each layer.
6. Illustrate the final design.
7. Prepare the order.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Engineer Assistant (1361) and Engineer Equipment Officer (1310) or Engineer Equipment Chief (1349)

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**1302-MOBL-2052:** Supervise repair of a main supply route

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a section of MSR to be repaired, a frag order, task organized equipment and personnel, and references.

**STANDARD:** To restore the MSR to the designated level of operational capability per the references.

**PERFORMANCE STEPS:**

1. Conduct route reconnaissance.
2. Determine type and extent of repairs required.
3. Determine task organization of personnel and equipment.
4. Determine material required to complete the repair.
5. Issue a repair order.
6. Inspect repairs.
7. Submit appropriate engineer reports.
8. Coordinate with supported unit.
9. Coordinate logistical support, as required.
10. Coordinate security, as required.
11. Ensure safety measures are observed to reduce risks during construction.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  2. FMFM 13 MAGTF Engineer Operations
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**1302-MOBL-2053:** Supervise route sweep operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, a route to be swept, route sweep order, map, task organized personnel and equipment, and references.

**STANDARD:** To ensure sufficient mobility to support the concept of operations and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Review the route sweep plan.
2. Ensure the employment concept is consistent with the tactical situation and the scheme of maneuver.
3. Issue the order.
4. Conduct rehearsals and immediate action drills.
5. Conduct detailed inspections.
6. Ensure all explosive hazards are breached.
7. Submit required engineer reports.
8. Coordinate with supported unit.
9. Coordinate logistical support, as required.
10. Coordinate security, as required.
11. Ensure safety measures are observed to reduce risks during sweep/ clearance operations.
12. Coordinate explosive ordnance disposal support for sweep/ clearance operations.

**RELATED EVENTS:**

1302-MOBL-2049                      ENGR-MOBL-4803

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-170 Engineer Reconnaissance
3. FMFM 13 MAGTF Engineer Operations
4. MCRP 3-17A Engineer Field Data
5. MCRP 3-17B Engineer Forms and Reports

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** RANGE SAFETY OFFICER, CORPSMAN

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**1302-MOBL-2054:** Supervise breaching of complex obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, an operation order, a map, task organized personnel and equipment, commander's intent, and references.

**STANDARD:** To ensure the breach is executed per the mission order and the commander's intent per the reference.

**PERFORMANCE STEPS:**

1. Identify requirements outlined in the breach plan.
2. Task organize and coordinate personnel and equipment.
3. Issue the breaching orders to unit leaders.
4. Plan and conduct breach rehearsals.
5. Conduct the breach per breaching fundamentals; suppress, obscure, secure, reduce, and reconstitute.
6. Submit required engineer reports.
7. Coordinate with support force and assault force to synchronize actions at the breach site.
8. Coordinate logistical support, as required.
9. Coordinate security, as required.
10. Ensure safety measures are observed to reduce risks during breaching operations.
11. Coordinate transfer of control of breach lanes with support breach force or designated follow-on forces.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 90-13-1 Combined Arms Breaching Operations
3. FMFM 13-7 MAGTF Breaching Operations
4. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System

**SUPPORT REQUIREMENTS:**

**ORDNANCE:**

<u>DODIC</u>	<u>Quantity</u>
J143 Rocket Motor, 5-inch MK22 Mod 4	
M913 Charge, Demolition High Explosive Li	
M914 Charge, Demolition Inert Linear M68A	

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**UNITS/PERSONNEL:** Range Safety Officer, Corpsman

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-SURV-2065:** Conduct planning to minimize collateral damage to structures and critical urban services

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation in an urban environment, an operations order, a map, required personnel and equipment, commander's intent, and references.

**STANDARD:** To meet unit requirements outlined in the concept of operations and commander's intent per the references.

**REFERENCES:**

1. FM 5-102 Countermobility
  2. FM 5-103 Survivability
  3. MCRP 3-17A Engineer Field Data
  4. MCWP 3-35.3 Military Operations on Urbanized Terrain
- 

**1302-XENG-2069:** Supervise a vertical construction operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the concept of operations, commander's intent, task organization of personnel and equipment, a construction design, and references.

**STANDARD:** To ensure all construction activities are completed per the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze design requirements.
2. Develop construction management tool.
3. Establish site layout.
4. Coordinate logistical requirements.
5. Issue the order.
6. Inspect construction tasks.
7. Update construction schedule as required.
8. Submit required engineer reports.
9. Coordinate with supported unit.
10. Coordinate logistical support, as required.
11. Coordinate security, as required.
12. Ensure safety measures are observed to reduce risks during construction.

**RELATED EVENTS:**

1302-XENG-1082

**REFERENCES:**

1. FM 5-412 Project Management
2. FM 5-426 Carpentry
3. MCRP 3-17B Engineer Forms and Reports
4. TM 5-704 Construction Print Reading in the Field

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**1302-XENG-2083:** Supervise horizontal construction operation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the concept of operations, commander's intent, task organization of personnel and equipment, a construction design, and references.

**STANDARD:** To ensure all construction activities are completed per the concept of operations per the references.

**PERFORMANCE STEPS:**

1. Analyze design to determine requirements.
2. Employ construction management tool.
3. Establish site layout.
4. Coordinate logistical requirements.
5. Issue the order.
6. Inspect construction tasks to ensure proper construction techniques.
7. Update construction schedule to maximize productivity.
8. Coordinate with supported unit.
9. Submit appropriate engineer reports.
10. Coordinate logistical support, as required.
11. Coordinate security, as required.
12. Ensure safety measures are observed to reduce risks during construction.

**REFERENCES:**

1. FM 5-33 Terrain Analysis
2. FM 5-410 Military Soils Engineering
3. FM 5-412 Project Management
4. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
5. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
6. FM 5-434 Earthmoving Operations
7. MCRP 4-11.3E Multi-service Helicopter Sling Load: Vols I,II and III
8. NAVAIR 00-80T-115 Expeditionary Airfield NATOPS Manual

9. NAVAIR 51-60-A-1 Installation, Maintenance, Repackaging and Illustrated Parts Breakdown, AM-2 Airfield Mat and Accessories

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**1302-XENG-2084:** Design concrete block construction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given construction standards, commander's intent, concept of operations, task organized personnel and equipment, and references.

**STANDARD:** To meet or exceed the requirements specified in the construction plan per the references.

**PERFORMANCE STEPS:**

1. Conduct a site survey.
2. Determine site layout.
3. Determine resources availability.
4. Determine utility requirements.
5. Prepare construction drawing.
6. Determine bill of materials.
7. Obtain design approval.

**RELATED EVENTS:**

1302-XENG-2086

**REFERENCES:**

1. FM 5-34 Engineer Field Data - Field Expedient Charges
2. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** None

**MATERIAL:** Blueprints, calculation worksheets, calculator

**UNITS/PERSONNEL:** 1361 Engineer Assistant

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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**1302-XENG-2085:** Manage construction projects

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalion/Squadron Operations Officer, Company Commander, Platoon Commander

**GRADES:** 2NDLT, 1STLT, CAPT, MAJ

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a construction directive or operations order, construction standards, personnel, equipment, and the reference.

**STANDARD:** To meet the requirements outlined in the construction directive/operations order per the reference.

**PERFORMANCE STEPS:**

1. Analyze the construction project requirements.
2. Conduct site reconnaissance.
3. Develop the construction plan.
4. Determine resource availability and time constraints.
5. Determine coordination required for construction project.
6. Develop construction management tool.
7. Brief commander on the construction plan.
8. Develop an environmental plan.
9. Develop a safety plan.
10. Issue the order.
11. Perform coordination required for construction project.
12. Supervise construction projects.
13. Enforce quality control during project construction.
14. Update construction plan and reallocate resources as required.
15. Submit required engineer reports.
16. Coordinate with supported unit.
17. Coordinate logistical support, as required.
18. Coordinate security, as required.

**REFERENCES:**

1. FM 5-412 Project Management
- 

**1302-XENG-2086:** Supervise concrete block construction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Commander

**GRADES:** 2NDLT, 1STLT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a concrete block structure construction design, construction design, construction schedule, task organized personnel and equipment, and references.

**STANDARD:** To meet structure design requirements and the construction schedule per the references.

**PERFORMANCE STEPS:**

1. Analyze design to determine requirements.
2. Supervise the layout.
3. Manage quality control of the construction.
4. Update construction schedule as required.
5. Submit required engineer reports.
6. Coordinate with supported unit.
7. Coordinate logistical support, as required.
8. Coordinate security, as required.
9. Ensure safety measures are observed to reduce risks during construction.

**REFERENCES:**

1. FM 5-412 Project Management
2. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** NONE

**MATERIAL:** Blue prints, calculations worksheets, calculator

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** ORM

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CHAPTER 11

MOS 1310 INDIVIDUAL EVENTS

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CHAPTER 11

MOS 1310 INDIVIDUAL EVENTS

**11000. PURPOSE.** This chapter includes all individual training events for the Engineer Equipment Officer. An individual event is an event that a trained Engineer Equipment Officer would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**11001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1310).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**11002. INDIVIDUAL CORE CAPABILITIES 1310**

1. ENGINEER EQUIPMENT OFFICER - 1310 - Career Progression Philosophy

Engineer Equipment Officers serve in the Engineer Support Battalion, the Combat Engineer Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which an officer moves through the Engineer community is as follows:

- a. Warrant Officer selected to serve as Engineer Equipment Officers after graduation from The Basic School.
- b. Students will be trained at Engineer Equipment Instruction Company, Marine Detachment Fort Leonard Wood, MO.
- c. Engineer Equipment Officers will be assigned to the operating forces at the Division, or Marine Logistics Group.
- d. Recommended Billet Assignments:
  1. Engineer Equipment Platoon Commander
  2. Engineer Equipment Operations Officer, Company/Battalion)
  3. Maintenance Management Officer Company/Battalion)
  4. Engineer Equipment Academics Officer (FLW)

2. Billet Description. Engineer Equipment Officers are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ENGINEER EQUIPMENT OFFICERS

Engineer equipment officers are warrant officers who manage and coordinate engineer equipment employment, repair, and related metalworking activities in support of all engineering and material handling tasks associated with mobility, counter-mobility, general engineering, and logistics operations. They manage the eleven functional areas of maintenance management, to include establishing field maintenance and equipment staging sites, and procedures for their defense. Engineer equipment officers may also perform duties of a special staff officer at the battalion or general staff level, providing advice in equipment employment, material readiness, and qualification/training.

3. Core Skills. Core skills are those essential skills that enable the officer to perform as a Ground Supply Operation Officer. The following core skills are identified for MOS 1310:

- a. Manage Load Test of Material Handling Equipment.
- b. Manage Maintenance-Related Reports.
- c. Manage Preventive Maintenance (PM) Program.
- d. Manage Corrective Maintenance (CM) Program.
- e. Manage MIMMS-AIS.
- f. Manage Engineer Equipment Availability.
- g. Manage Equipment Maintenance/Operations.
- h. Manage Licensing Program

4. Billet Applicability. The basic duties and core skills for the 1310 MOS are the same throughout the operating forces.

**11003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**11004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1310-XENG-1401:** Manage Load Test Engineer Equipment

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Load Test Engineer Equipment

**BILLETS:** Maintenance Officer

**GRADES:** CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:**

**CONDITION:** Provided appropriate load lifting equipment with completed annual condition inspection, maintenance resources, and references.

**STANDARD:** To validate equipment safety and operability per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine load testing requirements.
3. Conduct load test.
4. Document load test results.
5. Submit documentation to certifying officials.

**PREREQUISITE EVENTS:**

1349-XENG-2307

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Formal Schools.

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**1310-XENG-1402:** Manage Corrosion Prevention and Control

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Corrosion Prevention and Control

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given an equipment section, required safety materials, appropriate tools, and the references.

**STANDARD:** To maintain equipment in an operational status per the reference.

**PERFORMANCE STEPS:**

1. Identify corrosion prevention and control requirements.
2. Establish corrosion prevention and control procedures.
3. Manage corrosion prevention and control procedure

**REFERENCES:**

1. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  2. TM 3080-50 Corrosion Control Procedures for Depot Maintenance Activities
- 

**1310-XENG-1403:** Manage Support and Test Equipment Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided support and test equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review support and test equipment assets and requirements.
3. Supervise support and test equipment inventory and control.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1404:** Manage Maintenance Administration

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, local maintenance directives, and the reference.

**STANDARD:** To support mission requirements per the reference.

**PERFORMANCE STEPS:**

1. Provide input to the unit Maintenance Management Standard Operating Procedures.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1405:** Manage Maintenance-Related Reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance-related reports, supporting documentation, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Validate Daily Process Report.
3. Review Daily Transaction Listing.
4. Review Weekly Table of Authorized Material (TAM ) Report.
5. Review Weekly Maintenance Exceptions Report.
6. Review Weekly LM2 Report.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1406:**    Manage Horizontal Construction

**EVALUATION-CODED:**    NO

**SUSTAINMENT INTERVAL:**    12 months

**BILLETS:**    Maintenance Officer

**GRADES:**    WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:**    FORMAL

**CONDITION:**    Provided a horizontal construction project, a construction site, construction plan, engineer equipment, resources, and references.

**STANDARD:**    To meet specifications and milestones per the construction plan and the references.

**PERFORMANCE STEPS:**

1. Implement the construction plan.
2. Supervise personnel.
3. Supervise equipment
4. Supervise available resources.
5. Conduct quality assurance.

**REFERENCES:**

1. FM 5-412 Project Management
2. FMFM 13 MAGTF Engineer Operations

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:**    Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1407:**    Manage Maintenance of Engineer Equipment Records/Forms

**EVALUATION-CODED:**    NO

**SUSTAINMENT INTERVAL:**    12 months

**BILLETS:**    Maintenance Officer

**GRADES:**    WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:**    FORMAL

**CONDITION:**    Provided items of engineer equipment, appropriate records/forms, and references.

**STANDARD:**    To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify requirements for engineer equipment records/forms.
3. Ensure records for each item of engineer equipment are established as required.
4. Supervise maintenance of records and forms.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1408:** Manage Engineer Equipment MOS Training Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a unit annual training plan and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review annual training plan.
2. Establish a section training plan.
3. Supervise MOS training.

**REFERENCES:**

1. MCO 3501.7A MCCRES
2. MCO P4790.2 MIMMS Field Procedures Manual
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1409:** Layout a Maintenance Shop

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Maintenance Shop Layout.

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL



**CONDITION:** Provided with the references, an area or facility, a maintenance mission and maintenance resources.

**STANDARD:** To meet mission requirements per the references.

**PERFORMANCE STEPS:**

1. Identify resources.
2. Identify mission requirements.
3. Identify environmental and natural resource considerations.
4. Designate appropriate maintenance shop areas.
5. Implement the maintenance shop plan.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer equipment officer Course formal Schools.

---

**1310-XENG-1410:** Manage Engineer Equipment Section Supply Support Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Engineer Equipment Section Supply Support Program

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided with the references, maintenance related MIMMS-AIS reports, and appropriate equipment related publications.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Submit input for field budget requirements.
3. Establish/manage PEB and ERO layette procedures.
4. Submit input for supply blocks.
5. Establish validation/reconciliation procedures.

**REFERENCES:**

1. MCO 4400-16G UMMIPS
  2. MCO 4400.16 Uniform Materiel Movement and Issue Priority System
  3. MCO P4400.150E Marine Corps Consumer Level Policy Manual
  4. MCO P4400.82 MIMMS Controlled Item Management Manual
  5. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
  6. MCO P7100.8 Field Budget Guidance Manual
  7. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  8. UM 4400-124 FMF SASSY Using Unit Procedures
  9. UM 4400-15 Marine Corps User Manual (Organic Property Control)
  10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
-

**1310-XENG-1411:** Manage Equipment Recovery Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment requiring recovery, resources, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine recovery requirements.
2. Determine available resources.
3. Develop a recovery plan.
4. Supervise recovery operations.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1412:** Manage Horizontal Construction Project Production and Logistical Requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction mission, resources, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Conduct site reconnaissance.
2. Identify construction requirements.
3. Identify logistical requirements.
4. Identify environmental controls and natural resources considerations.
5. Formulate an estimate.
6. Conduct site reconnaissance.
7. Identify construction requirements.
8. Identify logistical requirements.
9. Identify environmental controls and natural resources considerations.
10. Formulate an estimate.

**REFERENCES:**

1. FM 5-412 Project Management
2. FMFM 13 MAGTF Engineer Operations
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1413:** Manage Engineer Equipment Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, available resources, a mission, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine engineer equipment assets required.
2. Conduct engineer equipment operations.
3. Supervise material handling equipment employment.
4. Supervise earth moving equipment employment.
5. Supervise general support engineer equipment employment.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-103 Survivability
3. FM 90-1 Countermobility
4. FM 90-13-1 Combined Arms Breaching Operations
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1414:** Manage MIMMS-AIS

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage MIMMS\_AIS

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided with the references, maintenance related reports, and supporting documents.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review daily process report
2. Validate LM2 report
3. Manage weekly TAM report
4. Manage weekly maintenance exception report
5. Manage weekly material report.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** 1. Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools. 2. MCI-0414, Ground Maintenance procedures for Supervisors.

---

**1310-XENG-1415:** Manage Preventive Maintenance (PM) Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, local maintenance directives, and the reference.

**STANDARD:** To support mission requirements per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine equipment PM requirements.
3. Develop PM schedule.
4. Conduct the engineer equipment PM program.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures

3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1416:** Engineer Equipment Maintenance Shop Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided with the references, appropriate load lifting equipment with ACI, and maintenance resources.

**STANDARD:** To ensure equipment is certified per the references.

**PERFORMANCE STEPS:**

1. Determine load testing equipment.
2. Review the references.
3. Manage load testing of equipment.
4. Develop unit load testing procedures.
5. Review load test data.
6. Certify equipment.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Formal Course Schools.

---

**1310-XENG-1417:** Manage Engineer Equipment Availability

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Engineer Equipment Availability.

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, engineer equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references
2. Review urgent of need designator assignment.
3. Review maximum maintenance cycle time.
4. Develop plan to increase equipment availability.

**REFERENCES:**

1. MCO 4790.1B MARINE CORPS INTEGRATED MANAGEMENT SYSTEM (MIMMS) INTRODUCTION MANUAL
2. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1418:** Manage the employment of engineer equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Employment of Engineer Equipment.

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided the references, engineer equipment, available resources, and a mission.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review mission requirements.
2. Manage engineer equipment operations.

**REFERENCES:**

1. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officers Course Formal School.

---

**1310-XENG-1419:** Manage Publications Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Publications Program

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Marine Corps Orders, technical publications, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review publication requirements.
3. Evaluate control procedures.
4. Evaluate Recommended Changes to Technical Publications (NAVMC 10772) procedures.
5. Determine deficiencies.
6. Take corrective actions as required.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. MCO P5215.17 USMC Technical Publications System

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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**1310-XENG-1420:** Manage Engineer Equipment MOS Training Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Engineer Equipment MOS Training Program.

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a unit annual training plan and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review annual training plan.
2. Establish a section training plan.
3. Supervise MOS training.

**REFERENCES:**

1. MCO 3501.7A MCCRES
2. MCO P4790.2 MIMMS Field Procedures Manual
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

---

**1310-XENG-1421:** Manage Corrective Maintenance (CM) Program

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Manage Corrective Maintenance (CM) Program.

**BILLETS:** Maintenance Officer

**GRADES:** WO-1, CWO-2, CWO-3, CWO-4, CWO-5

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, maintenance-related reports, engineer equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Determine equipment CM requirements.
3. Schedule CM as required.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H GROUND EQUIP RECORD PROCEDURES with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1310 Engineer Equipment Officer Course Formal Schools.

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ENG & UTIL T&R MANUAL

CHAPTER 12

MOS 1316 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 12

MOS 1316 INDIVIDUAL EVENTS

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**12001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1316).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Metal Worker individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**12002. INDIVIDUAL CORE CAPABILITIES 1316**

1. METAL WORKER 1316 - Career Progression Philosophy

Metal Workers serve in the Engineer Support Battalion, the Combat Engineer Battalion and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which a Metal Worker moves through the Engineer community is as follows:

a. Lance Corporals and above selected to serve as Metal Workers after graduation from The Basic Metalworker Course.

b. Students will be trained at Marine Detachment Aberdeen Proving Ground, MD.

c. Metal Workers will be assigned to the operating forces at the Division and Marine Logistics Group.

2. Billet Description. Metal Workers are trained, equipped, and assigned to specific units in the operating forces.

MISSION OF METAL WORKERS

Metal workers examine drawings and work orders; determine sequence of operations, materials, tools, equipment, time, and personnel required. They also perform installation, operation, maintenance and repair of metalworking, and welding equipment and material.

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Metal Worker. The following core skills are identified for MOS 1316:

- a. Set-up Marine Corps Tactical Welding Shop equipment.
- b. Operate Marine Corps Tactical Welding Shop equipment.
- c. Inspect Marine Corps Tactical Welding Shop equipment.
- d. Maintain Marine Corps Tactical Welding Shop equipment.

4. Billet Applicability. The basic duties and core skills for the 1316 MOS are the same throughout the operating forces.

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**12004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1316-XENG-1001:** Perform Operations check on Welding/Cutting Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, welding/cutting equipment, and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Inventory the equipment necessary to perform the assigned check.
2. Perform before operations checks.
3. Perform during operations checks
4. Perform after operations checks

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. TC 9-237 Welding Theory
2. TM 04055D-14&P Marine Corps Tactical Welding Shop
3. TM 10927A-14&P Technical Manual Titanium Kit

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom and welding annex or bay

**EQUIPMENT:** Welding and/or cutting equipment

**MATERIAL:** Personnel protective equipment

---

**1316-XENG-1002:** Cut Sheet Metal with Metal Shear

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, a metal shear, material to cut, and the references.3.

**STANDARD:** To ensure sheet metal is cut safely and accurately in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Prepare metal shear.
2. Perform operations checks and services.
3. Review the specifications for the cut.
4. Perform the required shear.
5. Secure the metal and shears.

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom and Welding Annex or welding bay

**EQUIPMENT:** Sheet Metal and metal shears

**MATERIAL:** Personnel Protective Equipment

---

**1316-XENG-1003:** Cut Metal with Plasma Arc Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, plasma arc cutting equipment, and the references.

**STANDARD:** To ensure safe operating conditions and job completion in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Inventory the equipment necessary to perform the assigned check.
2. Perform before operations checks.
3. Perform during operations checks.
4. Perform after operations checks.

**PREREQUISITE EVENTS:**

1316-XENG-1035                      1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Required equipment

**MATERIAL:** Personnel protective equipment

---

**1316-XENG-1006:** Conduct Safety Inspection.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided job site with working personnel to inspect and references.

**STANDARD:** To identify, annotate and ensure corrective procedures and actions in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Observe job site personnel and activities.
3. Identify Personal Protective Equipment
4. Identify discrepancies in safety procedures
5. Implement corrective action.

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Required equipment

**MATERIAL:** Required materials

---

**1316-XENG-1008:** Weld Carbon Steel with Oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided oxyacetylene welding equipment, carbon steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform operations checks and services.



3. Review the specifications for the object.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operation checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1001

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Oxyfuel Equipment

**MATERIAL:** Personnel protective equipment, required metal and required consumables

---

**1316-XENG-1011:** Cut Carbon Steel with Oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, oxyacetylene equipment, job specifications, and references.

**STANDARD:** To ensure proper cutting techniques and job completion in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform before operation checks and services.
3. Review the specifications for the object.
4. Prepare the metal for cutting.
5. Perform the required cuts.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Oxyfuel cutting equipments

**MATERIAL:** Personnel protective equipment and required metals

---

**1316-XENG-1012:** Weld Sheet Metal with oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided welding facility, oxyacetylene equipment, job specification and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform before operation checks and services.
3. Review the specifications for the object.
4. Prepare the metal for welding.
5. Perform the required welds.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006

1316-XENG-1035

1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Oxyfuel equipment

**MATERIAL:** Personnel protective equipment, required metals and required consumables

---

**1316-XENG-1013:** Weld Carbon Steel with Shielded Metal Arc Welding

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided sheet metal, welding equipment, carbon steel, job specification and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations for the object.
3. Review the specification for the object.
4. Prepare the metal for welding
5. Perform the required welds.
6. Perform after operations check
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006

1316-XENG-1035

1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Arc welding equipment

**MATERIAL:** Personnel protective equipment, required metals and required consumables

---

**1316-XENG-1018:** Weld Armor Plate with Shielded Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided shielded metal arc welding equipment, armor plate, job specifications, and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.

4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006                      1316-XENG-1001                      1316-XENG-1035  
1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory
3. TM 08594A-25/1 Welding Procedures for Light Armored Vehicle

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1020:** Weld Carbon Steel with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas metal arc welding equipment, carbon steel, job specifications and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Gas metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

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**1316-XENG-1021:** Weld Alloy Steel with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas metal arc welding equipment, alloy steel, job specifications and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001  
1316-XENG-1006

1316-XENG-1035

1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Gas metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1022:** Weld Aluminum with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas metal arc welding equipment, aluminum, job specifications and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Gas metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1025:** Weld Armor Plate with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas metal arc welding equipment, armor plate, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specifications for the object.
4. Prepare the metal for welding.
5. Perform the required welds
6. Perform after operation checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1034	1316-XENG-1035	1316-XENG-1006
1316-XENG-1001		

**RELATED EVENTS:**

1316-XENG-1036	1316-XENG-1034	1316-XENG-1001
1316-XENG-1035	1316-XENG-1038	1316-XENG-1006

**REFERENCES:**

1. TM 08594A-25/1 Welding Procedures for Light Armored Vehicle

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Gas Arc Welding Machine

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1029:** Weld Aluminum with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas tungsten arc welding equipment, aluminum, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001	1316-XENG-1035	1316-XENG-1034
1316-XENG-1006		

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required metals, gases and required consumables

---

**1316-XENG-1030:** Weld Stainless Steel with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided gas tungsten arc welding equipment, stainless steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classrooms, welding annex or welding bay.

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required metals, gases and required consumables

---



**1316-XENG-1032:** Weld Titanium with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, gas tungsten arc welding equipment, titanium, job specifications and references

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006

1316-XENG-1035

1316-XENG-1034

1316-XENG-1001

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TM 10927A-14&P Technical Manual Titanium Kit

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay.

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1034:** Perform Forehand/Backhand Welding

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, welding equipment, metal and the references

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Required welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-1035:** Perform Identification Tests on Metal

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided necessary tools, metals to be tested, and the references.

**STANDARD:** To ensure correct metal for use in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Required equipment for metal identification

**MATERIAL:** Personnel protective equipment and required metals

---

**1316-XENG-1036:** Perform Intermittent Backstep Welding

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a welding facility, welding equipment, metal and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Prepare the material for welding.
3. Perform welding operations
4. Perform welding checks
5. Secure the welding equipment

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Required welding equipment

**MATERIAL:** Personnel protective equipment, required metals, gases and required consumables

---

**1316-XENG-1038:** Perform Corrosion Prevention and Control

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an item, required safety equipment, materials, appropriate tools and references.

**STANDARD:** To maintain equipment in operational condition in accordance with the job specifications and references.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Identify discrepancies.
3. Perform necessary corrective action to prevent corrosion and deterioration.
4. Properly dispose of waste.

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory
3. TM 4750-15/2 Painting and Registration Marking for Marine Corps Combat and

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, welding annex or welding bay

**EQUIPMENT:** Required equipment

**MATERIAL:** Personnel protective equipment Required materials

---

**1316-XENG-1042:** Complete Consolidated Engineer Equipment Operator Log and service Record (NAVMC 10524)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an item of engineer equipment, Consolidated Engineer Equipment Operator Log and Services Record (NAVMC 10524), Motor Vehicle and Engineer Record Folder (NAVMC 696D) and references.

**STANDARD:** To maintain engineer equipment records in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the Consolidated Engineer Equipment Operator Log and Services Record (NAVMC10524)

3. Annotate operator's entries as necessary.
4. Return completed Consolidated Engineer Equipment Operator log and Service Record (NAVMC 10524)

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, bay or equipment storage area.

**EQUIPMENT:** Required equipment

**MATERIAL:** NAVMC 10524 and required materials

---

**1316-XENG-1043:** Complete Equipment Repair Order and Equipment Repair Order Shopping List

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided necessary forms (NAVMC 10254/10925), appropriate equipment technical manual(s), and references.

**STANDARD:** To ensure relevant records are completed per type of service performed in accordance with the job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references
2. Review equipment technical manual to obtain maintenance information.
3. Complete Equipment Repair Order (NAVMC 10925)

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. UM 4790-5 Users Manual MIMMS

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, bay or equipment storage area

**EQUIPMENT:** Required equipment

**MATERIAL:** NAMC 10245/10925 and required materials

---

**1316-XENG-1047:** Maintain Engineer Equipment records and forms

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided items of engineer equipment, [NAVMC 696D/10523/10245/10560/10524/10561/10925] and references.

**STANDARD:** To meet mission requirements in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review references.
2. Determine records and forms required NAVMC 696D (Record Jacket), NAVMC 10523 (Engineer Equipment Operational Record), NAVMC 10245 (Equipment Repair Order), NAVMC 10560 (Worksheet for Preventative Maintenance and Technical Inspections for Engineer Equipment), NAVMC 10524 (Engineer Equipment Operation Log and Service Record), NAVMC 10561 (Preventative Maintenance Checks and Service Roster), NAVMC 10925 (Equipment Repair Order Shopping List).
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006                      1316-XENG-1043                      1316-XENG-1042

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM 4790-5 Users Manual MIMMS

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding Bay or office

**EQUIPMENT:** Required equipment

**MATERIAL:** Required equipment

---

**1316-XENG-1049:** Conduct Inventory of Tools Sets, Chests, and Kits.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tool sets, chests, kits and references.

**STANDARD:** To reconcile the inventory list for accountability and serviceability in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Conduct inventory.
3. Properly annotate inventory sheet.
4. Take corrective action as required.

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Classroom, bay or equipment storage area

**EQUIPMENT:** Required equipment

---

**1316-XENG-1050:** Operate the Marine Corps Tactical Welding Shop

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Marine Corps Tactical Welding Shop (MCTWS), job specifications and references.

**STANDARD:** To ensure proper operation of the Marine Corps Tactical Welding Shop (MCTWS) per the references.

**PERFORMANCE STEPS:**

1. Perform before, during and after operations checks.
2. Perform start up procedures
3. Perform set up procedures for all welding/cutting operations.
4. Perform shutdown procedures
5. Conduct operator preventative maintenance checks and services.

**PREREQUISITE EVENTS:**

1316-XENG-1006

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Welding Machine and other required equipment

**MATERIAL:** Personnel protective equipment, required consumables, metals and gases.

---

**12005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1316-XENG-2004:** Forge Metal Objects with Oxyacetylene

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:**

**CONDITION:** Provided welding facility, oxyacetylene equipment, material to forge, job specification, and the references.

**STANDARD:** To ensure proper techniques in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform operation check and services.
3. Review the specifications for the object.
4. Prepare the material for forging.
5. Forge the material.
6. Perform after operations checks and services.
7. Secure the oxyacetylene equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Oxyfuel equipment

**MATERIAL:** Personnel protective equipment and required objects

---

**1316-XENG-2005:** Perform Metal Surface Hardening.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided oxyacetylene welding equipment, metal, job specifications and references.



**STANDARD:** To ensure proper surface hardening in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform before operation checks and services
3. Review the specifications for the object.
4. Prepare the metal for hardening.
5. Harden the metal.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Oxyfuel equipment

**MATERIAL:** Personnel protective equipment, required metals and gases

---

**1316-XENG-2007:** Weld or Braze Cast Iron with Oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided oxyacetylene welding equipment, cast iron, job specifications, and references.

**STANDARD:** To ensure a serviceable weld or braze in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform operations checks and services.
3. Review the specifications for the object.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding Bay

**EQUIPMENT:** Oxyfuel welding equipment

**MATERIAL:** Personnel protective equipment, required object or metal and required consumables

---

**1316-XENG-2009:** Weld Alloy Steel with Oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided oxyacetylene welding equipment, alloy steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform before operation checks and services.
3. Review the specifications for the object.
4. Prepare the metal for welding.
5. Perform the required welds.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Oxyfuel welding equipment

**MATERIAL:** Personnel protective equipment, required object or metal and required consumables

---

**1316-XENG-2010:** Weld Cast steel with Oxyacetylene Equipment.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided oxyacetylene welding equipment, cast steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform before operation checks and services.
3. Review the specifications for the object.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Oxyfuel welding equipment

**MATERIAL:** Personnel protective equipment, required object or metal and required consumables

---

**1316-XENG-2014:** Weld Alloy Steel with Shielded Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided shielded metal arc welding equipment, alloy steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Shielded metal Arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metal and required consumables.

---

**1316-XENG-2015:** Weld Aluminum with Shielded Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided shielded metal arc welding equipment, aluminum, job specifications, and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Shielded metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2016:** Weld Stainless Steel with Shielded Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided shielded metal arc welding equipment, stainless steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Shielded metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2017:** Weld Cast Steel with Shielded Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided shielded metal arc welding equipment, cast steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Shielded metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2019:** Weld Pipe with Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided welding facility, arc welding equipment, material to weld and the references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2023:** Weld Stainless Steel with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided gas metal arc welding equipment, stainless steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.

6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2024:** Weld Cast Steel with Gas Metal Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided gas metal arc welding equipment, cast steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**



**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas metal arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables.

---

**1316-XENG-2026:** Weld Carbon Steel with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided gas tungsten arc welding equipment, carbon steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables

---

**1316-XENG-2027:** Weld Cast Iron with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided Gas Tungsten Arc Welding Equipment, carbon steel, job specifications, and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment.
2. Perform operations checks and services
3. Review the specifications for the object.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations services and checks
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1006	1316-XENG-1001	1316-XENG-1035
1316-XENG-1034		

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas Tungsten Arc Welding Equipment

**MATERIAL:** Personnel Protective Equipment, required object or metals and required consumables

---

**1316-XENG-2028:** Weld Alloy Steel with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided gas tungsten arc welding equipment, alloy steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.

3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables

---

**1316-XENG-2031:** Weld Cast Steel with Gas Tungsten Arc Welding Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided gas tungsten arc welding equipment, cast steel, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Gas tungsten arc welding equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables

---

**1316-XENG-2033:** Fabricate Special Tools and Metal Objects

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided welding/cutting equipment, fabrication material, welding materials, job specifications and references.

**STANDARD:** To ensure a functional tool or object in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material for welding.
5. Perform the required welds.
6. Perform after operations checks.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001  
1316-XENG-1006

1316-XENG-1035

1316-XENG-1034

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Required welding and cutting equipment

**MATERIAL:** Personnel protective equipment, required metals and gases, required consumables and required drawing and or blueprints

---

**1316-XENG-2037:** Perform Sheet Metal Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a welding facility, job specifications, materials, tools and references.

**STANDARD:** To ensure correct cutting, forging or a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks
3. Determine bill of material
4. Draw pattern(s)
5. Lay out pattern(s)
6. Prepare the material
7. Perform sheet metal operations
8. Secure the equipment

**PREREQUISITE EVENTS:**

1316-XENG-1001

1316-XENG-1035

1316-XENG-1034

1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Required welding and/or cutting equipment

**MATERIAL:** Personnel protective equipment, required object or metals and required consumables

---

**1316-XENG-2039:** Construct Sheet Metal Objects

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided sheet metal working tools, sheet metal, materials, job specifications and references.

**STANDARD:** To ensure a functional object in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references
2. Perform operations checks and services
3. Draw pattern(s)
4. Lay out the pattern(s)
5. Prepare the material
6. Perform the required cuts and folds to fabricate the object.
7. Assemble the object.
8. Perform after operations checks and services.
9. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Welding or cutting equipment

**MATERIAL:** Personnel protective equipment, required metal, required consumables, required drawing and/or blueprints.

---

**1316-XENG-2040:** Repair Sheet Metal Objects

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided sheet metal working tools, sheet metal, materials, an object, job specifications and references.

**STANDARD:** To ensure a serviceable weld in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Set up the equipment
2. Perform operations checks and services.
3. Review the specification for the project.
4. Prepare the material.
5. Perform the required cuts and folds to repair the object
6. Perform after operations checks and services.
7. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1035                      1316-XENG-1034  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. TC 9-237 Welding Theory

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Required welding and/or cutting equipment

**MATERIAL:** Personnel protective equipment, required objects and required consumables

---

**1316-XENG-2041:** Repair Radiators

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided oxyacetylene welding equipment, radiator patching material, solder, flux, soldering iron, water and compressed air supplies, appropriate tools, and references.

**STANDARD:** To ensure a serviceable weld and maintain appropriate pressure in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review TM 9-237 and the job specifications
2. Set up the welding equipment
3. Purge the radiator
4. Clean the radiator
5. Repair the radiator
6. Test the radiator.
7. Perform after operations checks.
8. Secure the equipment.

**PREREQUISITE EVENTS:**

1316-XENG-1001                      1316-XENG-1036                      1316-XENG-1035  
1316-XENG-1006

**REFERENCES:**

1. 1-56637-987-3 Modern Welding Textbook
2. FM 43-2 Metalbody Repair and Related Operations
3. TC 9-237 Welding Theory
4. TM 750-254 Tactical Vehicle Cooling System

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay

**EQUIPMENT:** Welding and or cutting equipment

**MATERIAL:** Personnel protective equipment, required object and required consumables

---

**1316-XENG-2044:** Supervise Welding Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided subordinate personnel, welding job specifications, welding equipment, materials and references.

**STANDARD:** To ensure safe working conditions, proper techniques and job completion in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review references and specifications.
2. Brief welding crew on mission requirements.
3. Observe crew on mission requirements.
4. Ensure safety precautions are observed.
5. Ensure product/process meets specifications.
6. Complete required documentation.

**PREREQUISITE EVENTS:**

1316-XENG-1042

1316-XENG-1006

1316-XENG-1049

1316-XENG-1043

**REFERENCES:**

1. TC 9-237 Welding Theory
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. UM 4790-5 Users Manual MIMMS

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay/office

**EQUIPMENT:** Required equipment

**MATERIAL:** Required materials

---

**1316-XENG-2045:** Supervise Welding Shop Inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months



**GRADES:** SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided welding shop, welding equipment and tools, subordinate personnel and references.

**STANDARD:** To ensure inventory is conducted in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Issue instructions to personnel.
3. Observe inventory in progress.
4. Ensure safe handling of tools and materials.
5. Review discrepancies.
6. Complete required documents.

**PREREQUISITE EVENTS:**

1316-XENG-1006                      1316-XENG-1049                      1316-XENG-1043  
1316-XENG-1042

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay/office

**EQUIPMENT:** Required equipment

**MATERIAL:** Required material

---

**1316-XENG-2046:** Supervise Welding Shop Preventative Maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**GRADES:** SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided items of engineer equipment, (NAVMC 696D/10523/10245/10560/10524/10561/10925) and references.

**STANDARD:** To meet mission requirements in accordance with job specifications and references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine records and forms required NAVMC 696D (Record Jacket), NAVMV 10523 (Engineer Equipment Operational Record) NAVMC 10245 (ERO), NAVMC 10560 (Worksheet for Preventative Maintenance and Technical Inspection for

- Engineer Equipment), NAVMC (Engineer Equipment Operation Log and Service Record), NAVMC 10561 (Preventive Maintenance Checks and Service Roster), NAVMC 10925 (EROSL).
3. Prepare records and forms
  4. Maintain records and forms

**PREREQUISITE EVENTS:**

1316-XENG-1006

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay/office

**EQUIPMENT:** Required equipment

**MATERIAL:** Required materials

---

**1316-XENG-2048:** Review MIMMS Reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide MIMMS-AIS reports, supporting documentation, and references.

**STANDARD:** To ensure completeness and accuracy per the requirements of the references.

**PERFORMANCE STEPS:**

1. Review references
2. Review MIMMS report.
3. Identify discrepancies.
4. Initiate corrective action.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**SUPPORT REQUIREMENTS:**

**ROOMS/BUILDINGS:** Welding bay/office

**EQUIPMENT:** Required equipment

**MATERIAL:** Required materials

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ENG & UTIL T&R MANUAL

CHAPTER 13

MOS 1341 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 13

MOS 1341 INDIVIDUAL EVENTS

**13000. PURPOSE.** This chapter includes all individual training events for the Engineer Equipment Mechanic. An individual event is an event that a trained Engineer Equipment Mechanic would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**13001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1341).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**13002. INDIVIDUAL CORE CAPABILITIES 1341**

1. ENGINEER EQUIPMENT MECHANIC - 1341 - Career Progression Philosophy

Engineer Equipment Mechanics serve in the Engineer Support Battalion, the Combat Engineer Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which a Mechanic moves through the Engineer community is as follows:

a. Recommended Billet Assignments; for Pvt- LCpl: Heavy Equipment Mechanic

b. Recommended Billet Assignments; Cpl-Sgt:

1. Equipment Mechanic
2. Squad Leader or Platoon Sergeant
3. Quality Control or Floor Chief
4. Tool Room NCO or Publications NCO
5. Basic Engineer Equipment Instructor (Sergeants)

c. Students will be trained at Engineer Equipment Instruction Company, Marine Detachment Fort Leonard Wood, MO.

d. Engineer Equipment Mechanics will be assigned to the operating forces at the Division, or Marine Logistics Group.

2. Billet Description. Engineer Equipment Mechanics are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ENGINEER EQUIPMENT MECHANICS

Engineer equipment mechanics perform preventive maintenance and make repairs to diesel engines and gasoline and diesel driven construction equipment such as tractors, power shovels, road machinery, air compressors, concrete mixers and other engine driven or towed construction equipment.

3. Core Skills. Core skills are those essential skills that enable the Mechanic to perform as an Engineer Equipment Mechanic. The following core skills are identified for MOS 1341:

- a. Perform corrective maintenance on engineer equipment IAW Technical manuals.
- b. Perform preventive maintenance IAW Technical manuals and Marine Corps publications.
- c. Review daily process report (DPR)
- d. Complete the worksheet for preventive maintenance and technical inspection for engineer equipment (NAVMC 10560)
- e. Perform preventive maintenance and complete all documents IAW MCO 4790. 2C and 4700.1H.
- f. Understand how to read an LM2 report and TAM report.
- g. Familiarize themselves with MCBUL 3000 and MERIT.
- h. SSgt and above should be familiar with TFSMS, TAM, DPR, LM2, and MERIT.

4. Billet Applicability. The basic duties and core skills for the 1341 MOS are the same throughout the operating forces.

**13003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**13004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1341-MANT-1101:** Perform corrective maintenance on engineer equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform corrective maintenance on engineer equipment

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an item of engineer equipment, ERO, appropriate tools, equipment records, and references.

**STANDARD:** To return equipment to serviceable condition per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review the references.
3. Perform applicable corrective maintenance services.
4. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1102:** Repair air compressor system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair air compressor system.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning air compressor system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.

3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance actions.

**REFERENCES :**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1103:** Repair equipment electrical system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment electrical system.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning electrical system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance actions.

**REFERENCES :**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1104:** Complete the worksheet for preventive maintenance and technical inspection for engineer equipment (NAVMC 10560)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**DESCRIPTION:** Complete the worksheet for preventive maintenance and technical inspection for engineer equipment (NAVMC 10560)

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided necessary forms, template of equipment, and the references.

**STANDARD:** To reflect condition of the equipment per the references.

**PERFORMANCE STEPS:**

1. Review NAVMC 10560 template.
2. Complete required mechanic entries for the NAVMC 10560.
3. Review references

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-XENG-1105:** Perform preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform preventive maintenance

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided ERO, item of equipment, applicable tools, equipment records, and references.

**STANDARD:** To meet maintenance requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review ERO.
3. Perform applicable preventive maintenance services.
4. Initiate EROSL if required.
5. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
-

**1341-MANT-1106:** Repair equipment intake exhaust system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment intake exhaust system.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning intake/exhaust system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review the ERO.
2. Review the references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1107:** Use test measurement and diagnostic equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Use test measurement and diagnostic equipment

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided test measurement and diagnostic equipment (TMDE), appropriate tools, an item of equipment, and the references.

**STANDARD:** To diagnose engineer equipment faults per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine appropriate system checks.

3. Perform the system check.
4. Identify applicable preventive maintenance services.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1341-MANT-1108:** Perform equipment limited technical inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform equipment limited technical inspection (LTI).

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, an item of engineer equipment, appropriate tools, EROSL, Preventive Maintenance and Technical Inspection (LTI) worksheet, and the references.

**STANDARD:** To ensure equipment conforms to specifications outlined in the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Perform checks indicated on the LTI worksheet (NAVMC 10560)
4. Initiate EROSL, as necessary.
5. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1109:** Repair equipment hydraulic system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment hydraulic system

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning hydraulic system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1110:** Repair equipment coolant system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment coolant system.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning coolant system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance action.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

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**1341-MANT-1111:** Repair equipment fuel system

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment fuel system.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning fuel system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance action.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

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**1341-MANT-1112:** Repair equipment brake system

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment brake system

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, brake system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired system.
7. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1113:** Adjust equipment power train components

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Adjust equipment power train components

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning power train system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review the ERO.
2. Review references.
3. Diagnose malfunction.
4. Perform necessary adjustments.
5. Test adjusted system.
6. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-MANT-1114:** Replace cutting edge/teeth on engineer equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Replace cutting edge/teeth on engineer equipment

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an item of engineer equipment, a 1345 operator to assist, cutting edges/teeth, appropriate tools, and the references.

**STANDARD:** To restore equipment to full operational condition per the references.

**PERFORMANCE STEPS:**

1. Review ERO
2. Review references
3. Ensure old cutting edge/teeth is/are removed.
4. Ensure the new cutting edge/teeth is/are safely installed.
5. Document Maintenance action.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1341-MANT-1115:** Repair equipment engine assembly

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair equipment engine assembly.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, malfunctioning engine assembly, appropriate tools, and references.

**STANDARD:** To restore proper function per the reference.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review References.
3. Diagnose malfunction.
4. Initiate EROSL if necessary.
5. Adjust, disassemble, or repair unserviceable part(s).
6. Test repaired system.
7. Document maintenance actions.
8. Test repaired system.
9. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1341-XENG-1116:** Conduct inventory of tool sets, chests, and kits

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct inventory of tool sets, chests, and kits.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided tools sets, chests, kits, and references.

**STANDARD:** To reconcile inventory records for accountability and serviceability per the references.

**PERFORMANCE STEPS:**

1. Review References
2. Properly annotate inventory sheet.
3. Take corrective actions as required.
4. Conduct inventory

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H Ground Equipment Record Procedures
  4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  5. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  6. Appropriate Technical Manuals
- 

**1341-XENG-1117:** Maintain publications

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Maintain publications.

**BILLETS:** Section Leader

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL



**CONDITION:** Provide with Marine Corps, technical publications, equipment related publications, and the references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Conduct inventory as required.
3. Annotate discrepancies.
4. Take corrective actions as necessary.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
  2. MCO P5215.17 USMC Technical Publications System
  3. MCO P5600.31G Marine Corps Publications and Printing Regulations
  4. NAVMC 2761 Catalog of Publications
- 

**1341-XENG-1118:** Review daily process report (DPR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Review daily process report (DPR).

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief, Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided DPR, supporting documentation, and the references.

**STANDARD:** To ensure completeness and accuracy per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review DPR.
3. Identify discrepancies.
4. Initiate corrective actions as required.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H Ground Equipment Record Procedures
  4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  5. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  6. UM 4790-5 Users Manual MIMMS
-

**13005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1341-MANT-2200:** Repair chain saw

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Repair chain saw

**BILLETS:** Squad Member

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an ERO, malfunctioning chain saw engine, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate ERSOL, if necessary.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test Chainsaw.
7. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate TM/Manufacture's Manual for Chainsaw

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2201:** Repair power train system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Repair power train system

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an ERO, malfunctioning power train system, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review ERO.
2. Review references.
3. Disassemble and remove parts to be replaced.
4. Diagnose malfunction.
5. Clean parts.
6. Replace parts.
7. Assemble system.
8. Test repaired equipment.
9. Adjust system.
10. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2203:** Repair engineer equipment attachments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Repair engineer equipment attachments

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an ERO, malfunctioning engineer equipment attachment, appropriate tools, and references.

**STANDARD:** To restore proper function per the references.

**PERFORMANCE STEPS:**

1. Review the ERO.
2. Review references.
3. Diagnose malfunction.
4. Initiate EROSL, if required.
5. Adjust, disassemble, or repair unserviceable part (s).
6. Test repaired attachment.
7. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2204:** Maintain ERO layettes

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Maintain ERO layettes

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide an ERO, EROSL repair parts, ERO layettes, and the references.

**STANDARD:** To ensure repair parts are kept in the appropriate layettes and available for timely maintenance of engineer equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Receive repair parts, annotate EROSL, and place repair parts in appropriate layette.
3. Take corrective action if repair part does not match EROSL.
4. Maintain EROSL in the appropriate layettes.
5. Issue repair parts, and annotate EROSL.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H Ground Equipment Record Procedures
4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
5. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
6. UM 4790-5 Users Manual MIMMS

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal school.

---

**1341-MANT-2205:** Complete calibration control record

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Complete calibration control record

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided calibration control record data, appropriate calibration control record, and the reference.

**STANDARD:** To maintain calibration data per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review the appropriate Calibration Control Record.
3. Annotate Calibration Control Record as necessary

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2206:** Perform equipment operational procedures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform equipment operational procedures

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a D7G tractor, D7G tractor attachments, appropriate tools, and references.

**STANDARD:** To install D7G tractor attachments per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.

2. Prepare tractor for attachments.
3. Install the attachments.

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools..

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**1341-MANT-2207:** Prepare estimate cost repair worksheet

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Prepare estimate cost repair worksheet

**BILLETS:** Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a completed Preventive Maintenance and Technical Inspection (LTI) Worksheet, Estimate Cost Repair Worksheet, and the references.

**STANDARD:** To record cost estimate date per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review the LTI worksheet (NAVMC 10560)
3. Complete the estimate Cost Repair Worksheet.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2208:** Complete equipment repair order (ERO) and equipment repair order shopping list (EROSL)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Complete equipment repair order (ERO) and equipment repair order shopping list (EROSL)

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided ERO and EROSL data, appropriate equipment technical manual(s), and the references.

**STANDARD:** To reflect data per type of service performed and the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review equipment technical manual to obtain maintenance information.
3. Complete required mechanic's entries for ERO and/or EROSL.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2209:** Overhaul diesel engines

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Overhaul diesel engines

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an ERO, a malfunctioning diesel engine, appropriate tools and equipment, a complete layette, equipment records, and the references.

**STANDARD:** To ensure efficient operation with a +/- 5 percent tolerance to the criteria listed in the references.

**PERFORMANCE STEPS:**

1. Review the ERO.
2. Review the references.
3. Disassemble and removes parts to be replaced.
4. Clean parts.
5. Assemble engine.
6. Replace Parts.

7. Test repaired engine.
8. Document maintenance action.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2210:** Complete commodity manager's modification control record

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Complete commodity manager's modification control record

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an item of engineer equipment, Commodity Manager's Modification Control Record (NAVMC 11053/11054), and the references.

**STANDARD:** To record equipment modifications per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Examine equipment for modifications.
3. Review NAVMC 11053/11054.
4. Complete NAVMC 11053/11054, as required.

**REFERENCES:**

1. SL-1-2/SL-1-3 Index of Publications Stocked by the USMC
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H Ground Equipment Record Procedures
4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
5. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
6. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

---

**1341-MANT-2211:** Maintain pre-expended bins

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months



**DESCRIPTION:** Maintain pre-expended bins

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide pre-expended bins; low cost, high usage hardware items; and the references.

**STANDARD:** To ensure bins are stocked for timely maintenance of engineer equipment per the references.

**PERFORMANCE STEPS:**

1. Separate items by NSN into separate boxes, compartments, or containers labeled with the NSN.
2. Review the reference.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Mechanic formal schools.

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ENG & UTIL T&R MANUAL

CHAPTER 14

MOS 1345 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 14

MOS 1345 INDIVIDUAL EVENTS

**14000. PURPOSE.** This chapter includes all individual training events for the Engineer Equipment Operator. An individual event is an event that a trained Engineer Equipment Operator would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**14001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1345).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**14002. INDIVIDUAL CORE CAPABILITIES 1345**

1. ENGINEER EQUIPMENT OPERATOR - 1345 - Career Progression Philosophy

Engineer Equipment Operators serve in the Engineer Support Battalion, the Combat Engineer Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which an Operator moves through the Engineer community is as follows:

- a. Recommended Billet Assignments; for PVT- L/Cpl: Heavy Equipment Operator
  - b. Recommended Billet Assignments; Cpl-Sgt:
    - 1. Equipment Operator
    - 2. Squad Leader or Platoon Sergeant
    - 3. Quality Control and Tool Room NCO
    - 4. Dispatcher, Records and Forms NCO
    - 5. Lot/Assistant Lot Foreman
  - c. Students will be trained at Engineer Equipment Instruction Company, Marine Detachment Fort Leonard Wood, MO.
  - d. Engineer Equipment Operators will be assigned to the operating forces at the Division, or Marine Logistics Group.
2. Billet Description. Engineer Equipment Operators are trained, equipped, and assigned to specific units in the operating forces.

MISSION OF ENGINEER EQUIPMENT OPERATORS

Engineer equipment operators operate gasoline or diesel engine powered, self-propelled, skid-mounted, and towed engineer construction equipment including accessories and allied equipment used in earthmoving, grading, excavation, logging, clearing, and landing operations.

3. Core Skills. Core skills are those essential skills that enable the Operator to perform as an Engineer Equipment Operator. The following core skills are identified for MOS 1345:

- a. Install/Remove tractor, rubber tired, articulated steering, multipurpose 644E (TRAM) attachments.
- b. Operate tractor, rubber-tired, articulated steering, multipurpose 644E (TRAM) in support of engineer operations.
- c. Operate Terex (LCRTF) forklift in support of engineer operations
- d. Operate extended boom forklift (MMV) in support of engineer operations.
- e. Perform equipment operator preventive maintenance.
- f. Operate MC1150E tractor in support of engineer operations
- g. Assist with equipment scheduled preventive maintenance.
- h. Operate 621B Scraper in support of engineer operations.
- i. Operate LRT-110 Crane in support of engineer operations.
- j. Install/Remove Rough Terrain Container Handler (RTCH) attachment.
- k. Install/Remove High Speed High Mobility Crane Attachments.
- l. Operate M9 ACE tractor in support of engineer operations.
- m. Operate High Speed High Mobility Crane in support of engineer operations.
- n. Operate Multi-Terrain loader.

4. Billet Applicability. The basic duties and core skills for the 1345 MOS are the same throughout the operating forces.

**14003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**14004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1345-XENG-1100:** Install/Remove tractor, rubber tired, articulated steering, multipurpose 644E (TRAM) attachments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Install/Remove tractor, rubber tired, articulated steering, multipurpose 644E (TRAM) attachments

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided TRAM Tractor, TRAM Tractor attachments, and the reference.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Prepare the tractor for attachments.
3. Install or remove the attachments.
4. Perform operator checks and services as necessary.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Marine must be licenses on the item of equipment.

---

**1345-XENG-1102:** Install/remove the 420C Vibratory Compactor drums.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Install/remove the 420C Vibratory Compactor drums

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided 420C Vibratory Compactor, 420C Compactor drums, and appropriate tools, and the references.

**STANDARD:** To ensure installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Prepare compactor for drums.
3. Install/remove the drums.
4. Perform operator checks and services as necessary.
5. Review the reference.
6. Prepare compactor for drums.
7. Install/remove the drums.
8. Perform operator checks and services as necessary.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Marine must be licenses on item of equipment.

---

**1345-XENG-1103:** Install/Remove extended boom forklift (MMV) attachments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Install/Remove extended boom forklift (MMV) attachments

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an extended boom fork lift (MMV), extended boom fork lift attachments, and the reference.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Prepare fork lift for attachments.
3. Install or remove the attachments.
4. Perform operator checks and services as necessary.

**REFERENCES:**

1. Appropriate Technical Manuals
-



**1345-XENG-1104:** Assist with equipment scheduled preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Assist with equipment scheduled preventive maintenance

**BILLETS:** Squad Member

**GRADES:** PVT, PFC

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, appropriate tools, equipment records, and references.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Assist in the performance of applicable second echelon preventive maintenance services.
3. Document maintenance actions as necessary.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H Ground Equipment Record Procedures
  3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
  5. Appropriate Technical Manuals
- 

**1345-XENG-1105:** Conduct Safety Inspections.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct Safety Inspections.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a working environment with working personnel and references.

**STANDARD:** To identify discrepancies in safety procedures and to provide for their immediate correction per the references.

**PERFORMANCE STEPS:**

1. Observe working environment and activities.
2. Identify discrepancies in safety procedure.
3. Issue corrective orders

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
- 

**1345-XENG-1106:** Operate the 130G grader in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate the 130G grader in support of engineer operations.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided 130G, an engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks.
3. Perform starting procedures.
4. Perform during operations checks.
5. Operate grader to perform area leveling.
6. Operate grader to perform ditching operations.
7. Operate grader to perform road improvement operations.
8. Operate grader to perform seven-step military road operations.
9. Perform shut down procedures.
10. Perform after operations checks.
11. Complete operational records.

**REFERENCES:**

1. Appropriate Technical Manuals
- 

**1345-XENG-1107:** Operate tractor, rubber-tired, articulated steering, multipurpose 644E (TRAM) in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate the TRAM 644E

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a TRAM, an engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate tractor to perform clamshell operations
6. Operate tractor to perform loading a haul unit.
7. Operate tractor to perform material handling operations
8. Perform shut down procedures.
9. Perform after operations checks and services.
10. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on item of equipment.

---

**1345-XENG-1108:** Operate extended boom forklift (MMV) in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate extended boom forklift (MMV) in support of engineer operations.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an MMV, an engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.

5. Operate forklift to perform material handling operations.
6. Perform shut down procedures.
7. Perform after operations checks and services.
8. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on the item of equipment

---

**1345-XENG-1109:** Operate D7G tractor in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate D7G tractor.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided D7G Tractor, an engineer equipment requirement, engineer records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate tractor to perform stockpiling.
6. Operate tractor to perform leveling.
7. Operate tractor to perform ditching operations.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed, on item of equipment.

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**1345-XENG-1110:** Operate MC1150E tractor in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate MC1150E tractor.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:**

**CONDITION:** Provided MC1150E Tractor, an engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate tractor to perform stockpiling operations.
6. Operate tractor to perform leveling operations.
7. Operate tractor to perform ditching operations.
8. Perform shut down procedures.
9. Perform after operations checks and services.
10. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on item of equipment.

---

**1345-XENG-1111:** Operate the 420C Vibratory Compactor in support of engineer Operations.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate the 420C Vibratory Compactor.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 420C Vibratory Compactor, an engineer equipment requirement, engineer equipment records and forms and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate compactor to perform compacting operations.
6. Perform shut down procedures.
7. Perform after operations checks and services.
8. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Marine must be licensed on the item of equipment.

---

**1345-XENG-1112:** Operate Terex (LCRTF) forklift in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate Terex (LCRTF) forklift.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Terex (LCRTF) forklift, an engineer requirement, engineer records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate forklift to perform material handling operations.
6. Perform shut down operations.

7. Perform after operations checks and services.
8. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on the item of equipment.

---

**1345-XENG-1113:** Prepare motor vehicle accident report (SF 91)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Prepare motor vehicle accident report (SF 91).

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided accident data, SF 91, and the reference.

**STANDARD:** To record the accident per the reference.

**PERFORMANCE STEPS:**

1. Review SF 91.
2. Annotate appropriate operator's entries on SF 91.
3. Submit to appropriate supervisor.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
- 

**1345-XENG-1114:** Assist in replacing cutting edges/teeth on applicable engineer equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Assist in replacing cutting edges/teeth.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an item of engineer equipment, a 1341 Engineer Equipment Mechanic, cutting edges/teeth, appropriate tools, and reference.

**STANDARD:** To restore equipment to full operational conditional per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Consult with mechanic as to the level of assistance required in replacing the cutting edges/teeth.
3. Assist in removing old cutting edges/teeth.
4. Assist in replacing new cutting edges/teeth.

**PREREQUISITE EVENTS:**

1345-XENG-1114                      1341-MANT-1114

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above.

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**1345-XENG-1115:** Camouflage positions, vehicles, or equipment with lightweight screening system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Camouflage positions, vehicles, or equipment.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, an area, vehicle(s), or equipment, lightweight camouflage screen, and the references.

**STANDARD:** To prevent detection from 200 meters or more in any direction or from the air per the references.

**PERFORMANCE STEPS:**

1. Review size of positions, vehicles, or equipment to be camouflaged.
  2. Determine required modules of lightweight screen needed.
  3. Assemble modules into one net.
  4. Place assembled modules over position, vehicles, or equipment to be camouflaged.
  5. Ensure appropriate blend is showing.
  6. Tie into existing natural or other manmade camouflage.
  7. Inspect area frequently and upgrade camouflage as needed.
-



**1345-XENG-1116:** Perform corrosion prevention and control

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform corrosion prevention and control.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an item of equipment, required safety equipment, materials, appropriate tools, and references.

**STANDARD:** To maintain equipment in optimum operating condition per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify discrepancies.
3. Perform necessary corrective action.
4. Dispose of waste.

**REFERENCES:**

1. TM 3080-12 Corrosion Control for Marine Corps Ground Equipment
  2. TM 3080-50 Corrosion Control Procedures for Depot Maintenance Activities
- 

**1345-XENG-1117:** Operate 420D IT backhoe in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate 420D IT backhoe.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 420D IT Tractor, an engineer equipment requirement, engineer equipment records and forms and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate tractor to perform front end loader operations.
6. Operate tractor to perform ditching/trenching operations.

7. Perform shut down procedures.
8. Perform after operations checks and services.
9. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on the item of equipment.

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**1345-XENG-1118:** Perform equipment operator preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Perform equipment operator preventive maintenance.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, appropriate tools, equipment records, and references.

**STANDARD:** To meet maintenance requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform appropriate operator preventive maintenance.
3. Document maintenance actions.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  2. Appropriate Technical Manuals
-

**14005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1345-XENG-2200:** Operate 621B Scraper in support of engineer operations.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate 621B Scraper.

**BILLETS:** Squad Member

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided 621B Scraper, and engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operations checks and services.
3. Perform starting procedures.
4. Perform during operations checks and services.
5. Operate the scraper.
6. Perform shut down procedures.
7. Perform after operations checks and services.
8. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marines must be Licensed on item of equipment.

---

**1345-XENG-2201:** Operate LRT-110 Crane in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate the LRT-110 Crane

**BILLETS:** Squad Leader, Squad Member

**GRADES:** LCPL, CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided the LRT-110 Crane, and engineer equipment requirement, engineer equipment records and forms, and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform starting procedures.
3. Operate the crane.
4. Perform before operations checks and services.
5. Perform after operations checks and services
6. Perform shut down procedures
7. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marine must be Licensed on item of equipment.

---

**1345-XENG-2203:** Operate Rough Terrain Container Handler (RTCH) in support of engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate Rough Terrain Container Handler (RTCH) in support of engineer operations.

**BILLETS:** Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a RTCH, an engineer equipment requirement, engineer equipment records and forms and references.

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform before operational checks and services.
3. Perform starting procedures.
4. Operate container handler to perform material handling operations.
5. Perform during operations checks and services.
6. Perform shut down procedures.
7. Perform after operations checks and services.
8. Complete operational records.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marine must be Licensed on the item of equipment.

---

**1345-XENG-2204:** Install/Remove Rough Terrain Container Handler (RTCH) attachment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Install/Remove Rough Terrain Container Handler (RTCH) attachment

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Rough Terrain Container Handler (RTCH), RTCH attachment, and the references.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Prepare the tractor for attachments.
3. Install or remove the attachments.
4. Perform operator checks and services as necessary.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Marine must be licenses on the item of equipment.

---

**1345-XENG-2205:** Install/Remove High Speed High Mobility Crane Attachments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Install/Remove High Speed High Mobility Crane Attachments.

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a High Speed mobility Crane, attachments, tools, and reference.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the reference.
2. Prepare crane for attachments.
3. Install or remove the attachments.
4. Perform operator checks and services as necessary.

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marine must be licensed.

---

**1345-XENG-2206:** Conduct inventory of tools sets, chests, and kits

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Conduct inventory of tools sets, chests, and kits

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tool sets, chests, kits, and references.

**STANDARD:** To reconcile inventory records for accountability and serviceability per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Conduct inventory.
3. Properly annotate inventory sheet.
4. Take corrective actions as required.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

---

**1345-XENG-2207:** Prepare/Maintain engineer equipment operator records/forms.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Prepare/Maintain Engineer equipment Records and Forms.

**BILLETS:** Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided and item of Engineer Equipment, Record Jacket (NAVMAC 696D), Engineer Equipment Operational Record (NAVMC10523), Daily Dispatch -Log record of Vehicles (NAVMC10031) ERO (NAVMC10245) Worksheet for Preventive Maintenance and Technical Inspection for Engineer Equipment (NAVMC10560), Engineer Equipment Operation Log and Services Record Consolidated (NAVMC 10524), Preventive Maintenance Checks and Services Roster (NAVMC 105), EROS Condition Inspection Record, Load Test Equipment Daily checklist (NAVMC 10925) and reference.

**STANDARD:** To comply with record-keeping procedures per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine records/forms required.
3. Prepare the proper records/forms.
4. Maintain records/forms on file, and/or submit as required.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend formal school.

---

**1345-XENG-2208:** Assist in the installation/removal of D7G tractor attachments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Assist in the installation/removal of D7G tractor attachments

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide a 1341 Engineer Equipment Mechanic, D7G tractor, D7G Tractor attachments, and the reference.

**STANDARD:** To ensure safe installation/removal with no injury to personnel or damage to the equipment per the reference.

**PERFORMANCE STEPS:**

1. Review the reference
2. Prepare tractor for attachments.
3. Install or remove the attachments
4. Perform operator checks and services as necessary.

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

---

**1345-XENG-2209:** Operate M9 ACE tractor in support of engineer operations.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate M9 Ace tractor in support of engineer operations

**BILLETS:** Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an M9 ACE Tractor, and engineer equipment requirement, engineer equipment records and forms and references.



**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Perform starting procedures.
2. Operate the M9 Ace.
3. Perform during operations checks and services.
4. Perform shut down procedures.
5. Complete operational records.
6. Perform after operations checks and services.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marine must be Licensed on the item of equipment.

---

**1345-XENG-2210:** Operate High Speed High Mobility Crane in support of engineer operations.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Operate the High Speed high mobility crane in support of engineer operations.

**BILLETS:** Platoon Sergeant, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a High speed Mobility Crane, an engineer equipment requirement, engineer equipment records and forms, and references

**STANDARD:** To safely meet operational requirements with no injury to personnel or damage to the equipment per the references.

**PERFORMANCE STEPS:**

1. Perform before operational checks and services.
2. Perform starting procedures
3. Perform during operational checks and services.
4. Operate the crane
5. Perform shut down procedures.
6. Review the references.
7. Perform after operational checks and services.
8. Complete operational records

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

**SPECIAL PERSONNEL CERTS:** Marine must be licensed on item of equipment.

---

**1345-XENG-2211:** Assist in performing engineer equipment limited technical inspection (LTI)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Assist in performing engineer equipment limited technical inspection (LTI).

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an item of equipment, a 1341 engineer equipment mechanic, a Preventive Maintenance and Technical Worksheet (NAVMC 10560), appropriate tools, and references.

**STANDARD:** To meet LTI requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Perform operator preventive maintenance checks and services.
3. Assist the mechanic in inspecting the equipment per the technical manual.
4. Record inspection results.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

---

**1345-XENG-2212:** Prepare Quality Deficiency Report (DQR) (SF368)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Squad Leader, Squad Member

**GRADES:** PVT, PFC, LCPL, CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, a QDR (SF 368), and references.

**STANDARD:** To reflect equipment deficiencies per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine SF 368 requirements.
3. Prepare SF 368.
4. Submit SF 368 to appropriate supervisor.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

---

**1345-XENG-2213:** Maintain Engineer Licensing Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Maintain Licensing Program.

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided unit T/O, unit T/E, item of equipment, and references.

**STANDARD:** To ensure operators are licensed per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review license applications.
3. Conduct equipment training.
4. Administer licensing tests.
5. Prepare licenses/reject applications.
6. Ensure history files, license log book, action data file, and service record book (SRB) entries are properly documented.

**REFERENCES:**

1. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
2. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must be Cpl or above to attend NCO Operator formal school.

---

ENG & UTIL T&R MANUAL

CHAPTER 15

MOS 1349 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 15

MOS 1349 INDIVIDUAL EVENTS

**15000. PURPOSE.** This chapter includes all individual training events for the Engineer Equipment Chief. An individual event is an event that a trained Engineer Equipment Chief would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**15001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1349).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Ground Supply individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**15002. INDIVIDUAL CORE CAPABILITIES 1349**

1. ENGINEER EQUIPMENT CHIEF - 1349 - Career Progression Philosophy

Engineer Equipment Chiefs serve in the Engineer Support Battalion, the Combat Engineer Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which a Chief moves through the Engineer community is as follows:

- a. Recommended Billet Assignments; GySgt:
    - 1. Engineer Equipment Platoon/Detachment SNCOIC
    - 2. Engineer Equipment Maintenance or Operations Chief (Company/Battalion)
    - 3. Company Gunnery Sergeant
    - 4. Maintenance Management Chief
  - b. Recommended Billet Assignments; MSgt:
    - 1. Engineer Equipment Maintenance Chief
    - 2. Engineer Equipment Operations Chief (Battalion Level)
    - 3. Maintenance Management Chief
    - 4. Maintenance Chief with CLB
  - c. Recommended Billet Assignments; MGySgt:
    - 1. Engineer Equipment Maintenance/Operations Chief (Division, Group or Wing Level)
    - 2. Maintenance Management Chief
    - 3. SNCOIC at Maintenance Battalion
  - d. Engineer Equipment Chiefs must attend the Engineer Equipment Chief Course, taught at Engineer Equipment Instruction Company, Marine Detachment Fort Leonard Wood, MO.
  - e. Engineer Equipment Chiefs will be assigned to the operating forces at the Division, or MLG.
2. Billet Description. Engineer Equipment Chiefs are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ENGINEER EQUIPMENT CHIEFS

Engineer equipment chiefs manage the activities of enlisted personnel performing engineer equipment operation, maintenance, and repair. This MOS will be assigned only by the authority of the CMC (MM).

3. Core Skills. Core skills are those essential skills that enable the Chief to perform as an Engineer Equipment Chief. The following core skills are identified for MOS 1349:

- a. Supervise Engineer Equipment Operations
- b. Supervise Engineer Equipment Maintenance
- c. Supervise Welding Operations

4. Billet Applicability. The basic duties and core skills for the 1349 MOS are the same throughout the operating forces.

15003. INDEX OF INDIVIDUAL EVENTS BY LEVEL

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**15004. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1349-XENG-2301:** Supervise horizontal construction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Horizontal Construction

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction project, a construction site, construction plan, engineer equipment, resources, and references.

**STANDARD:** To meet specifications and milestones per the construction plan and the references.

**PERFORMANCE STEPS:**

1. Implement the construction plan.
2. Supervise personnel.
3. Supervise equipment
4. Supervise available resources.
5. Conduct quality assurance.
6. Conduct inspections.

**REFERENCES:**

1. FM 5-412 Project Management
2. FMFM 13 MAGTF Engineer Operations

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2302:** Supervise Engineer Equipment Availability

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Engineer Equipment Availability

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, engineer equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references
2. Review urgent of need designator assignment.
3. Review maximum maintenance cycle time.
4. Develop plan to increase equipment availability.

**REFERENCES:**

1. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
2. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2303:** Supervise Publications Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Publications Program

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Marine Corps Orders, technical publications, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review publication requirements.
3. Evaluate control procedures.
4. Evaluate Recommended Changes to Technical Publications (NAVMC 10772) procedures.
5. Determine deficiencies.
6. Take corrective actions as required.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. MCO P5215.17 USMC Technical Publications System

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2304:** Supervise Corrective Maintenance (CM) Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Corrective Maintenance (CM) Program

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, maintenance-related reports, engineer equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Determine equipment CM requirements.
3. Schedule CM as required.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal School and completed the MCI.

---

**1349-XENG-2305:** Supervise Engineer Equipment Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Engineer Equipment Operations

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, available resources, a mission, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine engineer equipment assets required.
2. Conduct engineer equipment operations.
3. Supervise material handling equipment employment.
4. Supervise earth moving equipment employment.
5. Supervise general support engineer equipment employment.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
2. FM 5-103 Survivability
3. FM 90-1 Countermobility
4. FM 90-13-1 Combined Arms Breaching Operations
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and completed the MCI.

---

**1349-XENG-2306:** Supervise Engineer Equipment MOS Training Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a unit annual training plan and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review annual training plan.
2. Establish a section training plan.
3. Supervise MOS training.

**REFERENCES:**

1. MCO 3501.7A MCCRES
2. MCO P4790.2 MIMMS Field Procedures Manual
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and completed the MCI

---

**1349-XENG-2307:** Load Test Engineer Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Load Test Engineer Equipment

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:**

**CONDITION:** Provided appropriate load lifting equipment with completed annual condition inspection, maintenance resources, and references.

**STANDARD:** To validate equipment safety and operability per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine load testing requirements.
3. Conduct load test.
4. Document load test results.
5. Submit documentation to certifying officials.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
3. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
4. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and completed the MCI.

---

**1349-XENG-2308:** Supervise Preventive Maintenance (PM) Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Preventive Maintenance (PM) Program

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, local maintenance directives, and the reference.

**STANDARD:** To support mission requirements per the reference.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine equipment PM requirements.
3. Develop PM schedule.
4. Conduct the engineer equipment PM program.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3
5. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2309:** Validate Maintenance-Related Reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Validate Maintenance-Related Reports

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance-related reports, supporting documentation, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Validate Daily Process Report.
3. Review Daily Transaction Listing.
4. Review Weekly Table of Authorized Material (TAM) Report.
5. Review Weekly Maintenance Exceptions Report.
6. Review Weekly LM2 Report.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 formal schools and completed the MCI.

---

**1349-XENG-2310:** Supervise Equipment Recovery Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Supervise Equipment Recovery Operations.

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided equipment requiring recovery, resources, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine recovery requirements.
2. Determine available resources.
3. Develop a recovery plan.
4. Supervise recovery operations.

**REFERENCES:**

1. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2311:** Supervise Support and Test Equipment Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Support and Test Equipment Program

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided support and test equipment, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review support and test equipment assets and requirements.
3. Supervise support and test equipment inventory and control.

**REFERENCES:**

1. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2312:** Supervise Engineer Equipment Section Supply Support Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Engineer Equipment Section Supply Support Program.

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance-related reports (MIMMS-AIS), appropriate equipment-related publications, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review supply support request.
3. Submit input for budget requirements.
4. Monitor allocated funding.
5. Determine secondary repairable.
6. Supervise Pre-Expended Bin (PEB) and Equipment Repair Order (ERO) layette procedures.

**REFERENCES:**

1. MCO 4400-16G UMMIPS
2. MCO 4400.150 Consumer Level Supply Policy Manual
3. MCO P4400.82 MIMMS Controlled Item Management Manual
4. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
5. UM 4400-124 FMF SASSY Using Unit Procedures
6. UM 4790-5 Users Manual MIMMS



**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2313:** Estimate Horizontal Construction Project Production and Logistical Requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Estimate Horizontal Construction Project Production and Logistical Requirements

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction mission, resources, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Conduct site reconnaissance.
2. Identify construction requirements.
3. Identify logistical requirements.
4. Identify environmental controls and natural resources considerations.
5. Formulate an estimate.
6. Conduct site reconnaissance.
7. Identify construction requirements.
8. Identify logistical requirements.
9. Identify environmental controls and natural resources considerations.
10. Formulate an estimate.

**REFERENCES:**

1. FM 5-412 Project Management
2. FMFM 13 MAGTF Engineer Operations
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS1349 Formal schools and completed the MCI.

---

**1349-XENG-2314:** Supervise Engineer Equipment Licensing Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Engineer Equipment Licensing Program

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, equipment operators/trainees, support documentation, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify licensing requirements.
3. Review testing procedures.
4. Supervise the engineer equipment licensing program.

**REFERENCES:**

1. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
2. TM 4700-15/1H Ground Equipment Record Procedures
3. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
4. TM 4700\_15H Ground Equipment Record Procedures with Ch1 Ch2 Ch3

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 formal school and completed the MCI.

---

**1349-XENG-2315:** Supervise Maintenance-Related Programs

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Maintenance-Related Programs

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided engineer equipment, support equipment, records/forms, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine requirements for maintenance-related programs.
2. Supervise modification control program.
3. Supervise calibration control program.

4. Supervise new equipment warranty program.
5. Supervise joint oil analysis program (JOAP).
6. Supervise replacement and evacuation program (R&E).
7. Supervise repair and return program (R&R).
8. Supervise quality deficiency program (QDR).
9. Supervise recoverable items program (WIR)
10. Supervise quality control program.

**REFERENCES:**

1. MCO 4105.2 Marine Corps Warranty Program
2. MCO 4731.1 Oil Analysis Program for Ground Equipment
3. MCO P4400.82 MIMMS Controlled Item Management Manual
4. MCO P4790.2C MIMMS Field Manual
5. TI 4731-14/1 Marine Corps Participation in the Joint Oil Analysis Program
6. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
7. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend formal 1349 Formal School, and completed the MCI.

---

**1349-XENG-2316:** Supervise Equipment Licensing Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Equipment Licensing Program

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** With personnel, supporting documentation, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Determine licensing requirements.
2. Establish a unit licensing program.
3. Monitor licensing program.

**REFERENCES:**

1. MCO 11240.66 Standard Licensing Procedures to Operate Military Motor
2. MCO P4790.2 MIMMS Field Procedures Manual
3. TM 11275-15/4 Tactical Engineer Equipment Licensing Manual
4. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** While unit SOPs are listed as a part of the references, thus becoming part of the standard, it should be noted that each individual unit in the Marine Corps has unit unique instructions in

its SOP, and the Formal School cannot possibly teach all unit SOPs. Therefore, the Formal School will teach this task using a generic set of unit SOPs.

**SPECIAL PERSONNEL CERTS:** Must attend MOS 1349 Formal Schools and have completed the MCI.

---

**1349-XENG-2317:** Supervise Maintenance Administration

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Maintenance Administration

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided maintenance resources, local maintenance directives, and the reference.

**STANDARD:** To support mission requirements per the reference.

**PERFORMANCE STEPS:**

1. Provide input to the unit Maintenance Management Standard Operating Procedures.
2. Conduct internal inspections program.
3. Plan, organize, and coordinate the use of maintenance resources.

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal schools and completed the MCI.

---

**1349-XENG-2318:** Supervise Maintenance of Engineer Equipment Records/Forms

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Supervise Maintenance of Engineer Equipment Records/Forms.

**BILLETS:** Engineer Equipment Maintenance Chief, Engineer Equipment Operations Chief

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided items of engineer equipment, appropriate records/forms, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Identify requirements for engineer equipment records/forms.
3. Ensure records for each item of engineer equipment are established as required.
4. Supervise maintenance of records and forms.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 formal school and completed the MCI.

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CHAPTER 16

MOS 1361 INDIVIDUAL EVENTS

**16000. PURPOSE.** This chapter includes all individual training events for the Engineer Assistant. An individual event is an event that a trained Engineer Assistant would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**16001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1361).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**16002. INDIVIDUAL CORE CAPABILITIES 1361**

1. ENGINEER ASSISTANT - 1361 - Career Progression Philosophy

Engineer Assistants serve in the Engineer Support Battalion, the Combat Engineer Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which an Engineer Assistant moves through the Engineer community is as follows:

- a. Recommended Billet Assignments; PFC-LCpl: Basic Draftsman and Surveyor
  - b. Recommended Billet Assignments; Cpl-Sgt:
    - 1. Engineer Squad Leader
    - 2. Drafting and Survey Crew Leader
    - 3. Section Publications NCO
    - 4. Section Mimms NCO
    - 5. Section Training NCO
  - c. Recommended Billet Assignments; GySgt:
    - 1. Engineer Platoon Sgt
    - 2. Construction Project Foreman
    - 3. Engineer Platoon Sergeant
    - 4. Engineer Operations Chief
  - d. Students will be trained at Engineer Equipment Instruction Company, Marine Detachment Fort Leonard Wood, MO.
  - e. Engineer Assistants will be assigned to the operating forces at the Division, Wing, or MLG.
2. Billet Description. Engineer Assistants are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF ENGINEER ASSISTANTS

Engineer assistants perform various duties incidental to construction design, planning, estimating, and management. Personnel assigned this MOS are trained to use optical reading/electronic total station survey instruments to establish the horizontal and vertical alignment/layout for construction projects. In addition, they are trained to use manual/Computer Aided Drafting (CAD) methods of preparing architectural/mechanical/civil drawings, to include computations for bills of material/earthwork volumes.

3. Core Skills. Core skills are those essential skills that enable the Engineer Assistant to perform as an Engineer Assistant. The following core skills are identified for MOS 1361:

- a. Perform basic drafting techniques.
- b. Create computer-aided multi-view drawings.
- c. Create computer-aided architectural drawings.
- d. Establish a control traverse.
- e. Conduct a radial survey.
- f. Adjust collected field data.
- g. Create computer-aided civil drawings.
- h. Layout a project.

4. Billet Applicability. The basic duties and core skills for the 1361 MOS are the same throughout the operating forces.



**16003. INDEX OF INDIVIDUAL EVENTS BY LEVEL**

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**16004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1361-SRVY-1101:** Perform basic drafting techniques

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Perform basic drafting techniques

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a computer, computer-aided drafting software, and references.

**STANDARD:** To meet American National Standards Institute (ANSI) guidelines per the references

**PERFORMANCE STEPS:**

1. Boot the computer.
2. Start the computer-aided drafting program.
3. Establish drawing parameters.
4. Utilize drawing command functions.

**REFERENCES:**

1. FM 5-553 General Drafting
- 

**1361-SRVY-1102:** Create computer-aided multi-view drawings

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a computer, computer-aided drafting program, written project specifications, design sketches, a printer or plotter, and references.

**STANDARD:** To conform to project specifications, design sketches, and American National Standards Institute (ANSI) guidelines per the references.

**PERFORMANCE STEPS:**

1. Review written specifications and design sketches.
2. Boot the computer.
3. Start the computer-aided drafting program.
4. Establish drawing parameters.

5. Create a multi-view drawing.
6. Print or plot the multi-view drawing.

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**1361-SRVY-1103:** Create computer-aided architectural drawings

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Create computer-aided architectural drawings

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a computer, computer-aided drafting software, written project specifications, design sketches, a printer or plotter, and references.

**STANDARD:** To conform to project specifications, design sketches, and American National Standards Institute (ANSI) guidelines per the references.

**PERFORMANCE STEPS:**

1. Review written project specifications and design sketches.
2. Boot the computer.
3. Start the computer-aided drafting program.
4. Establish drawing parameters.
5. Create a foundation plan.
6. Create a floor plan with door and window schedules.
7. Create an electrical plan with lighting schedule.
8. Create a plumbing plan with fixture schedule.
9. Create elevation views.
10. Create section and detail drawings.
11. Print or plot the architectural drawings.

**REFERENCES:**

1. FM 5-426 Carpentry
2. FM 5-428 Concrete Masonry
3. FM 5-553 General Drafting
4. NAVEDTRA 10696 Engineer Aid 3
5. TM 5-581B Construction Drafting
6. TM 5-704 Construction Print Reading in the Field
7. TM 5-760 Interior Wiring

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**1361-SRVY-1104:** Establish a control traverse

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Establish a control traverse

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided written project specifications, a total station instrument, a data collector device, and references.

**STANDARD:** To guide horizontal and vertical construction project layouts per the references

**PERFORMANCE STEPS:**

1. Review project specifications and design sketches.
2. Identify control station locations
3. Assemble the total station instruments and references targets
4. Initialize job file.
5. Perform station establishment
6. Initialize for automated rounds data collection.
7. Measure and record angle sets and distances between traverse stations.

**REFERENCES:**

1. FM 5-426 Carpentry
  2. FM 5-428 Concrete Masonry
  3. FM 5-553 General Drafting
  4. NAVEDTRA 10696 Engineer Aid 3
  5. TM 5-232 Elements of Construction Surveying
  6. TM 5-704 Construction Print Reading in the Field
  7. TM 5-760 Interior Wiring
- 

**1361-SRVY-1105:** Conduct a radial survey

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Conduct a radial survey

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided written project specifications, a control traverse, a total station instrument, a data collector device, and references.

**STANDARD:** To collect planimetric and topographic field data per the references.

**PERFORMANCE STEPS:**

1. Review project specifications.
2. Assemble the total station instrument.
3. Initiate job file
4. Perform Station Establishment
5. Initialize for topographic data collection.

6. Measure and record topographic data
7. Assign properties to observations.

**REFERENCES:**

1. NAVEDTRA 10696 Engineer Aid 3
2. TM 5-232 Elements of Construction Surveying

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**1361-SRVY-1106:** Adjust collected field data

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Adjust collected field data

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a data collector device, a computer, software applications, collected survey field data, a printer, and references.

**STANDARD:** To accurately represent existing terrain features per the reference.

**PERFORMANCE STEPS:**

1. Boot the computer.
2. Start the software program.
3. Connect the data collector device to the computer.
4. Run hardware synchronization.
5. Download the collected field data to the software program.
6. Edit keyed in data
7. Run automatic drafting from points feature.
8. Edit drawing for errors or appearance using data editor.

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**1361-SRVY-1107:** Create computer-aided civil drawings

**EVALUATION-CODED:** NO                      **SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Create computer-aided civil drawings

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a computer, computer-aided civil software, adjust field data file, written project specifications, a printer, and references.

**STANDARD:** To conform to project specifications, design sketches, and American National Standards Institute (ANSI) guidelines per the references.

**PERFORMANCE STEPS:**

1. Review written project specifications and design sketches.
2. Boot the computer.
3. Start the computer- aided drafting program.
4. Open project file.
5. Create a contoured site plan, per specifications.
6. Perform horizontal design per specifications.
7. Create cross section drawings.
8. Create a plan and profile drawing.
9. Create a contoured plot plan.
10. Print earthwork volume readouts.
11. Print or plot the civil drawings.

**REFERENCES:**

1. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  2. FM 5-553 General Drafting
  3. NAVEDTRA 10696 Engineer Aid 3
  4. TM 5-581B Construction Drafting
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**1361-SRVY-1108:** Layout a project

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Layout a project

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided written project design specifications, a total station instrument, a data collection device, a computer, software applications, a design coordinate file, a printer, and references,

**STANDARD:** To meet design specifications per the reference.

**PERFORMANCE STEPS:**

1. Boot the computer.
2. Start the software program.
3. Connect the data collector device to computer.
4. Upload design coordinates to the data collector device.
5. Establish hardware synchronization.
6. Print design coordinate data.
7. Assemble the total station instrument.
8. Access working file
9. Perform station establishment.
10. Initialize stake-out program
11. Stake-out project design points.

**REFERENCES :**

1. NAVEDTRA 10696 Engineer Aid 3
  2. TM 5-232 Elements of Construction Surveying
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**16005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1361-SRVY-2201:** Design a vertical construction project.

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Design a vertical construction project.

**BILLETS:** Section Leader, Squad Leader

**GRADES:** SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a vertical construction mission, a scientific calculator, a computer, software applications, and references.

**STANDARD:** To safely support all calculated loads per the references.

**PERFORMANCE STEPS:**

1. Review the vertical construction mission.
2. Perform a project site reconnaissance as necessary.
3. Perform a soil identification test as necessary.
4. Calculate the structure's live and dead loads.
5. Design the structural foundation requirements.
6. Design the structural framing requirements.
7. Identify finish construction material requirements.
8. Develop finished design sketches.
9. Create project design specifications

**REFERENCES:**

1. FM 5-428 Concrete Masonry
2. MCRP 3-17A Engineer Field Data
3. NAVEDTRA 10696 Engineer Aid 3
4. TM 5-426 Carpentry
5. TM 5-581B Construction Drafting
6. TM 5-704 Construction Print Reading in the Field

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-SRVY-2202:** Utilize automated facilities programs

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Utilize automated facilities programs.

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL



**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a project mission and specifications, a computer, facilities software applications, a printer or plotter, and the references.

**STANDARD:** To identify structural requirements in support of project missions and specifications per the references.

**PERFORMANCE STEPS:**

1. Review the project mission and specifications.
2. Boot the computer.
3. Start the automated facilities program.
4. Identify the appropriate facilities drawings.
5. Modify the facilities drawing as necessary.
6. Utilize the facility resource data base.
7. Print facilities resource lists.
8. Supervise the plotting of facilities drawings.

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-SRVY-2203:** Compute a project bill of materials

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Compute a project bill of materials.

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a vertical construction mission, a scientific calculator, a computer, software applications, and references.

**STANDARD:** To safety support all calculated loads per the references.

**PERFORMANCE STEPS:**

1. Review project mission, project specifications, and design drawings.
2. Calculate concrete quantities.
3. Calculate concrete reinforcement quantities.
4. Calculate concrete form work quantities
5. Calculate masonry quantities.
6. Calculate board, lumber, and timber quantities.
7. Calculate fastener quantities.
8. Calculate hardware quantities.
9. Calculate finish material quantities.
10. Calculate electrical fixture quantities.
11. Calculate plumbing fixture quantities.
12. Produce a consolidated project bill of materials.

13. Research material costs.
14. Submit a completed bill of materials for procurement.

**REFERENCES:**

1. FM 5-412 Project Management
2. FM 5-428 Concrete Masonry
3. NAVFAC P-405 Seabee Planner's and Estimator's Handbook
4. TM 5-426 Carpentry
5. TM 5-581B Construction Drafting
6. TM 5-704 Construction Print Reading in the Field

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-SRVY-2204:** Implement project planning methods

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**DESCRIPTION:** Implement project planning methods.

**BILLETS:** Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a project mission, written project specifications, finished design drawings, a completed bill of materials, a scientific calculator, a computer, software applications, a printer, and the references

**STANDARD:** To support the project mission per the references.

**PERFORMANCE STEPS:**

1. Review project mission, written project specifications, and design drawings.
2. Perform a project site reconnaissance as necessary.
3. Determine work activity.
4. Determine the logical sequence and inter-relationship of work activities.
5. Identify activity resource requirements.
6. Calculate activity durations.
7. Boot the computer.
8. Start the software application.
9. Establish project schedule settings.
10. Input the project activities with precedence order.
11. Input activity durations.
12. Input activity resource requirements.
13. Adjust the project schedule as necessary.
14. Print a network diagram.
15. Print a project activity report.
16. Print a resource schedule.
17. Brief the project officer.

18. Supervise the work activities.

**REFERENCES:**

1. FM 5-412 Project Management
2. NAVFAC P-405 Seabee Planner's and Estimator's Handbook

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-MANT-2205:** Maintain MIMMS program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Maintain MIMMS program.

**BILLETS:** Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide a maintenance directive, unit T/E, unit T/O, maintenance forms, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Maintain a publications library.
2. Maintain a calibration control program.
3. Complete an Equipment Repair Order (ERO) (NAVMC 10245).
4. Analyze Daily Processing Report (DRP).
5. Complete an ERO Shopping/Transaction list (NAVMC 10925).
6. Reconcile outstanding supply request.
7. Maintain desktop procedures.
8. Maintain equipment inventories.

**REFERENCES:**

1. MCO P4790.2C W/CH1 MIMMS Field Procedures Manual
2. TI 4733-15/1 Calibration Requirements Test, Measurement and Diagnostic Equipment (TMDE) Calibration and Maintenance Program
3. TI 4733-15/21 Survey Instrument Exchange Program
4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
5. UM 4790-5 Users Manual MIMMS
6. UNIT SOP Unit's Standing Operating Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-XENG-2206:** Supervise MOS Training Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section Leader

**GRADES:** GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a unit annual training plan and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Identify unit training requirements.
2. Identify Individual Training Standards (ITS) requirements.
3. Plan an individual training program.
4. Implement individual training program.
5. Supervise individual training program.

**REFERENCES:**

1. MCO 3501.7A MCCRES
2. MCO P4790.2 MIMMS Field Procedures Manual
3. Appropriate Technical Manuals

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal Schools/ and completed the MCI

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**1361-MANT-2207:** Supervise maintenance administration

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Supervise Maintenance Administration

**BILLETS:** Section Leader

**GRADES:** GYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided with maintenance resources, appropriate maintenance directives, and the reference.

**STANDARD:** To support mission requirements per the reference.

**PERFORMANCE STEPS:**

1. Provide input to the unit Maintenance Management Standard Operating Procedures (MMSOP).
2. Conduct internal inspections program.

3. Plan, organize, and coordinate the use of maintenance resources.
4. Maintain a turnover folder

**REFERENCES:**

1. MCO P4790.2C MIMMS Field Manual
2. UNIT SOP Unit's Standing Operating Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1349 Formal schools and completed the MCI.

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**1361-XENG-2208:** Supervise Equipment Records.

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Supervise Equipment Records.

**BILLETS:** Section Leader

**GRADES:** GYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided with engineer equipment, appropriate records/forms, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Identify publication requirements.
2. Evaluate publication on hand.
3. Determine NAVMC 10772 procedures.
4. Determine deficiencies
5. Take corrective action as required.

**REFERENCES:**

1. MCO 5215.1 Marine Corps Directives Management Program
2. MCO P4790.2 MIMMS Field Procedures Manual
3. NAVMC 2761 Catalog of Publications
4. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
6. UNIT SOP Unit's Standing Operating Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-XENG-2209:** Supervise Publication Resource

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Supervise Publication Resource

**BILLETS:** Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided Marine Corps Orders, Technical publications, equipment-related publications, and references.

**STANDARD:** To support mission requirements per the references.

**PERFORMANCE STEPS:**

1. Identify publication requirements.
2. Evaluate publications on hand.
3. Evaluate control procedures.
4. Determine NAVMC 10772 procedures.
5. Determine deficiencies.
6. Take corrective action as required.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
2. MCO P5215.17 USMC Technical Publications System
3. MCO P5600.31G Marine Corps Publications and Printing Regulations
4. NAVMC 2761 Catalog of Publications
5. UNIT SOP Unit's Standing Operating Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-MANT-2210:** Analyze maintenance management records

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**DESCRIPTION:** Analyze maintenance management records.

**BILLETS:** Calibrations NCO, Construction NCO, Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a Daily Processing Report (DPR), Equipment Repair Order (NAVMC 10245), and Equipment Repair Order Shopping/Transaction List (NAVMC 10925).

**STANDARD:** To identify and correct discrepancies per the references.

**PERFORMANCE STEPS:**

1. Analyze Daily Processing Report (DPR).
2. Analyze requisition procedures.
3. Analyze equipment records.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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**1361-SRVY-2211:** Design a horizontal construction project

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** Design a horizontal construction project

**BILLETS:** Section Leader, Squad Leader

**GRADES:** SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a horizontal construction mission, a scientific calculator, a computer, software applications, and references.

**STANDARD:** To meet construction mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the horizontal construction mission.
2. Perform a project site reconnaissance.
3. Perform a soil identification test.
4. Calculate drainage system requirements.
5. Identify structural dimensions.
6. Design the horizontal alignments for the project.
7. Design the vertical alignments for the project.
8. Balance earthwork volumes for the project.
9. Develop finished design sketches.
10. Create project design specifications.
11. Supervise the development of finished design drawings.
12. Supervise the layout of the project site.

**REFERENCES:**

1. FM 5-335 Drainage
2. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
3. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design

4. FM 5-530 Materials Testing
5. MCRP 3-17A Engineer Field Data

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** Must attend MOS 1361 Chiefs course formal school and completed the MCI.

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ENG & UTIL T&R MANUAL

CHAPTER 17

MOS 1371 INDIVIDUAL EVENTS

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ENG & UTIL T&R MANUAL

CHAPTER 17

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1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1371).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2171) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**17002. INDIVIDUAL CORE CAPABILITIES 1371**

1. COMBAT ENGINEER - 1371 - Career Progression Philosophy

Combat Engineers serve in the Combat Engineer Battalion, the Engineer Support Battalion, and the Marine Wing Support Squadron. The tour length for all ranks is 24-36 months. The order in which a Marine moves through the Engineer community is as follows:

- a. Volunteers/selected to serve as a Combat Engineer during the contracting period prior to enlisting in the Marine Corps, or after graduation from Recruit Training.
- b. Combat Engineer Students are screened/trained at Marine Corps Engineer School, Camp Lejeune, NC, in the Basic Combat Engineer Course (CID M031302).
- c. Combat Engineers will be assigned to the operating forces at the Division, Marine Logistics Group or Marine Air Wing.
- d. After a successful tour in the operating forces, a Combat Engineer will be reassigned to the operating forces or a "B" billet. Upon completion of the "B" billet the Combat Engineer will be reassigned to the operating forces."

2. Billet Description. Combat Engineers are trained, equipped, and assigned to specific units in the operating forces. They receive career progression training as NCOs at the Combat Engineer Noncommissioned Officer Course (CID M03ACS2), and as Engineer operations chiefs at the Engineer Operations Chief Course (CID M0313G2), both offered at Marine Corps Engineer School.

#### MISSION OF COMBAT ENGINEERS

Combat Engineers provide assured mobility by conducting obstacle breaching, constructing standard and non-standard line of communication bridges across wet and dry gaps, performing route and area clearance operations, conducting road and route reconnaissance, and repairing damaged airfields; they construct explosive and non-explosive obstacles, to include minefields, to provide countermobility support to the Operating Force; they enhance the survivability of forces by designing and building bunkers, aircraft hides and revetments, as well as hardening existing structures and positions; and they perform general Engineering tasks to include constructing temporary facilities, designing and building concrete and concrete block structures, and designing cantonments. Personnel assigned this MOS are proficient in basic, specialized and expedient demolitions; and explosive, ballistic and mechanical urban breaching techniques.

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Combat Engineer. The following core skills are identified for MOS 1371:

- a. Execute engineer missions.
- b. Employ/manage engineer equipment and resources.
- c. Advise supported unit on Engineer Employment.

4. Billet Applicability. The basic duties and core skills for the 1371 MOS are the same throughout the operating forces.

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**17004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1371-XENG-1001:** Cut lumber to dimension

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, a construction site, engineer carpentry tools, portable power tools, power source, and lumber.

**STANDARD:** Cut must be within +/- 1/16" of specified dimension, utilizing the proper tools, while observing all safety precautions.

**PERFORMANCE STEPS:**

1. Select a measuring tool.
2. Measure lumber to dimension required.
3. Mark the lumber.
4. Select appropriate saw.
5. Verify all safety precautions are in place.
6. Cut lumber.

**REFERENCES:**

1. FM 5-426 Carpentry
  2. Appropriate TM/Manufacture's Manual for Power Tools
- 

**1371-XENG-1002:** Place lumber

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided blueprints or specifications, construction site, engineer carpentry tools, lumber cut to specification, and fasteners.

**STANDARD:** By fastening pieces together using the proper fastener for the component being constructed, using proper tools while observing all safety precautions.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Select fastener.
3. Select appropriate fastening tool.
4. Place floor components.

5. Place exterior wall frame components.
6. Place wall components.
7. Place stair components.
8. Place roof components.

**REFERENCES:**

1. FM 5-426 Carpentry
  2. Appropriate Manufacturer's Assembly Manual/Instructions
- 

**1371-XENG-1003:** Construct concrete forms

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, a construction site, engineer carpentry tools, portable power tools, a power source, lumber, fasteners, joints and anchors (as necessary), tie rods/tie wire (as necessary), and reinforcing material (as necessary).

**STANDARD:** By fastening pieces together using the proper fastener for the form component being constructed; using proper tools while observing all safety precautions; and ensuring that finished form height conforms to building lines. As required, place all joints, anchors, and reinforcement per the design specifications.

**PERFORMANCE STEPS:**

1. Review the construction drawings, blueprints, and/or specifications.
2. Perform earthwork as necessary to level the surface area to be formed.
3. Construct footing/slab forms.
4. Construct wall forms.
5. Place reinforcement material per design specifications.
6. Oil forms prior to placing concrete.

**REFERENCES:**

1. FM 5-426 Carpentry
  2. FM 5-428 Concrete Masonry
- 

**1371-XENG-1004:** Mix concrete

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL



**CONDITION:** Provided specifications, a construction site, a concrete and masonry tool kit, sand, gravel, cement, a concrete mixer, a water source, and concrete forms.

**STANDARD:** To ensure batches of concrete are of uniform quality, conforming to the specified mix ratio; the concrete mixer is properly set up, operated, and secured; and safety precautions are observed at all times per the references.

**PERFORMANCE STEPS:**

1. Batch dry materials per specifications.
2. Add water per specifications.
3. Mix concrete, either by hand or with the concrete mixer, depending on availability. If using the concrete mixer, perform pre/post operating checks and services.
4. Perform slump test.
5. Place concrete.
6. Clean and secure all tools and equipment.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
2. Appropriate Manufacturer's Assembly Manual/Instructions

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**1371-XENG-1005:** Pour concrete

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, a construction site, a concrete and masonry tool kit, a screed board, and mixed concrete.

**STANDARD:** To produce a tight bond between the paste and coarse aggregate, filling the forms completely per the reference.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Prepare the subgrade by moistening, as required.
3. Check forms.
4. Place concrete.
5. Consolidate the concrete.
6. Screed the concrete.
7. Clean and secure all tools and equipment.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
-

**1371-XENG-1006:** Finish concrete

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, concrete and masonry tool kit, and freshly placed concrete.

**STANDARD:** To produce the desired finish per the specifications.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Float the concrete.
3. Trowel the concrete, if required in the specifications.
4. Broom the concrete, if required in the specifications.
5. Employ curing method(s).
6. Strip forms.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
- 

**1371-XENG-1007:** Lay concrete block

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided blueprints or specifications, a construction site, concrete block, mortar mix, a water source, a concrete and masonry tool kit, and mixing equipment.

**STANDARD:** To ensure that finished head joints and bed joints are between 5/16" and 7/16"; corners are at 90 degree angles; and courses are level and plumb.

**PERFORMANCE STEPS:**

1. Select appropriate blocks per the specifications.
2. Locate the corners of the structure.
3. Dry lay the corner.
4. Ensure corner is 90 degrees and mark the footing.
5. Mix mortar.
6. Replace loose blocks with a full bed of mortar.
7. Position and align the corner block.
8. Continue buttering and laying blocks on the first course.

9. Check alignment, level, and plumb after every three to four blocks.
10. Lay up the corners.
11. Lay block between corners.
12. Lay up control joints, as required by specifications.
13. Install closure block.
14. Dress and strike mortar joints.
15. Install anchor bolts/fill cores, as required by specifications.
16. Clean, survey, and store tools and equipment.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
- 

**1371-XENG-1008:** Fell standing timber

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an area of standing timber, appropriate hand tools, an SL-3 complete chainsaw, mixed fuel, and all personal protective equipment (PPE).

**STANDARD:** So that the tree is completely separated from the trunk; limbed as even with the bark of the trunk as possible; and bucked into specified lengths, while adhering to all safety requirements.

**PERFORMANCE STEPS:**

1. Inspect pioneer hand tools to be used.
2. Inspect chain saw.
3. Perform pre-operation checks and services on the chain saw.
4. Evaluate the standing timber, the surrounding area, and environmental conditions present.
5. Determine direction of fall.
6. Establish a safe area and an escape path.
7. Don all PPE.
8. Ensure non-essential personnel are in the safe area.
9. Fall the tree.
10. If tree does not fall completely, i.e., hung tree, dutchman, stalled tree, etc; cease operations until tree can be mechanically felled.
11. Limb tree.
12. Buck tree.
13. Perform post-operation checks and services on chain saw.

**REFERENCES:**

1. Appropriate TM/Manufacture's Manual for Chainsaw
-

**1371-XENG-1009:** Operate the 260 CFM compressor

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a training area, an SL-3 complete 260 CFM compressor, fuel, a concrete slab, 3" or greater nominal timber, personal protective equipment (PPE), and the reference.

**STANDARD:** All pre-operation checks and start up/shut down procedures must be performed per the manufacturer's checklist; and all SL-3 components must be selected and operated per the manufacturer's specifications.

**PERFORMANCE STEPS:**

1. Perform pre-operation checks and services.
2. Don all PPE.
3. Perform start up procedures.
4. Utilize SL-3 components.
5. Change SL-3 components.
6. Perform shut down procedures.
7. Perform post-operation checks and services.

**REFERENCES:**

1. TM 5-4310-256-15 Compressor Recip Air Hand, Truck Mounted
- 

**1371-XENG-1010:** Place timber

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, construction site, specifications, engineer carpentry tools, timber cut to specification, attaching hardware, personal protective equipment (PPE), and references.

**STANDARD:** to meet mission specifications, utilizing proper hand tools while observing safety precautions per the references.

**PERFORMANCE STEPS:**

1. Place timber for bunker construction.
2. Place timber for non-standard bridge components.

**REFERENCES:**

1. FM 5-103 Survivability

2. FM 5-446 Military Non-Standard Fixed Bridges
3. MCRP 3-17A Engineer Field Data

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**1371-XENG-1011:** Assemble prefabricated structures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** As a member of a team, provided a building location, a prefabricated structure, manufacturer's instructions, engineer tools, proprietary tools, and engineer heavy equipment.

**STANDARD:** Per the manufacturer's instructions.

**PERFORMANCE STEPS:**

1. Inventory building components.
2. Assemble prefabricated structures per manufacturer's instructions.

**REFERENCES:**

1. Appropriate Manufacturer's Assembly Manual/Instructions

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**1371-MOBL-1012:** Breach minefield(s)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided a mission, personnel, Class V, demolitions equipment, mine probes, mine detectors, and protective field equipment.

**STANDARD:** In accordance with breaching fundamentals, ensuring all mines in the lane are located, marked, and/or destroyed in place (or removed); and employ minefield marking system after successful breach.

**PERFORMANCE STEPS:**

1. Visually identify foreign mines.
2. Locate foreign mines by probing.
3. Locate foreign mines by using mine detectors.
4. Breach lane(s) by explosive means.
5. Proof the lane(s).
6. Mark a minefield safety lane for day and night passage.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 5-250 Explosives and Demolitions
3. MCRP 3-17A Engineer Field Data
4. MCWP 3-17 Engineer Operations
5. MCWP 3-17.3 MAGTF Breaching Operations
6. TM 013750-13&P Operators Manual MK-7 MOD. 1 Anti-Personnel Obstacle Breaching System (APOBS)

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Range Safety Officer, Corpsman

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**1371-MOBL-1013:** Destroy non-explosive obstacles

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a designated area with obstacle(s), engineer tools, demolition tools and equipment, class V, protective field equipment, and references.

**STANDARD:** To ensure force mobility is not fixed, turned, blocked, nor disrupted by successfully reducing all non-explosive obstacles encountered per the references.

**PERFORMANCE STEPS:**

1. Identify location of all obstacles requiring demolitions.
2. Formulate plan to destroy obstacles.
3. Reduce the obstacle.
4. Mark the lane as required.

**REFERENCES:**

1. FM 5-101 Mobility
2. FM 5-250 Explosives and Demolitions
3. GTA 5-10-33 Demolition Card
4. MCRP 3-17A Engineer Field Data
5. MCWP 3-17.3 MAGTF Breaching Operations

**SUPPORT REQUIREMENTS:**

**RANGE/TRAINING AREA:**

Facility Code 17830 Light Demolition Range

**UNITS/PERSONNEL:** Range Safety Officer, Corpsman

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**1371-MOBL-1014:** Assist in employing a Medium Girder Bridge (MGB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided a completed MGB Pro Forma, a gap, Medium Girder Bridge set, tools, a launch vehicle, personnel and references.

**STANDARD:** To meet design specifications and intended bridge classification per the Pro Forma, while observing safety precautions and technical specifications during build, boom and launch per the references.

**PERFORMANCE STEPS:**

1. Lay out the site based on critical pallet loads.
2. Install front roller beam.
3. Build end of bridge (EOB) + 1.
4. Install rear roller beam.
5. Build and boom bridge, to include launching nose configuration.
6. Launch the bridge.
7. Set bridge on deck.
8. Dress the bridge.
9. Anchor as required.
10. Retrieve the MGB.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
  2. TM 08676A-10/1-1 Operators Manual Medium Girder Bridge
- 

**1371-DEMO-1015:** Employ military explosives

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given appropriate Class V material, a demolition kit, protective field equipment and references.

**STANDARD:** To ensure detonation while observing all safety procedures.

**PERFORMANCE STEPS:**

1. Identify components of demolitions kits.
2. Identify types of military explosives.
3. Identity demolition accessories.
4. Detonate a demolition charge using a non-electric initiation system.

5. Detonate a demolition charge using an electric initiation system.
6. Detonate a demolition charge primed with a Det Cord firing system.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. GTA 5-10-33 Demolition Card
  3. MCRP 3-17A Engineer Field Data
- 

**1371-MOBL-1016:** Operate mine detectors

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a mine detector, personnel and equipment, a minefield, a mission, protective field equipment and references.

**STANDARD:** To ensure all mines in a lane, route, or area are located, marked, and neutralized with no injury to friendly personnel or damage to equipment.

**PERFORMANCE STEPS:**

1. Identify detector to be used.
2. Unpack the detector.
3. Inventory the detector.
4. Assemble the detector.
5. Phase in the detector.
6. Demonstrate proper sweeping techniques.
7. Locate and mark an object.
8. Identify the object as a mine.
9. Neutralize mine(s).
10. Proof area to ensure mine(s) has been properly neutralized.
11. Perform PMCS.
12. Disassemble and repack the mine detector.

**REFERENCES:**

1. Applicable operation and maintenance manual/guide
  2. Appropriate Technical Manuals
- 

**1371-MOBL-1017:** Maintain the MK 153 SMAW

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 1 month

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT



**CONDITION:** Without the aid of references, in a field or garrison environment, during daylight or darkness, given a SMAW and appropriate cleaning material.

**STANDARD:** to ensure the weapon functions and is free of carbon, dirt and rust in accordance with the references.

**PERFORMANCE STEPS:**

1. Check to ensure the weapon is in Condition 4.
2. Disassemble the weapon.
3. Inspect the weapon.
4. Clean the SMAW and the sights.
5. Reassemble the weapon.
6. Lubricate the weapon.
7. Perform function check.

**REFERENCES:**

1. TM 08673A-10/1 Launcher, Assault Rocket 83MM (SMAW) MK 153 MOD 0
  2. TM 08673A-25&P/2A Launcher, Assault Rocket 83MM (SMAW)
- 

**1371-MOBL-1018:** Engage targets with MK 153 SMAW

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical scenario which presents a series of realistic threats, at ranges 150 to 250 meters, wearing a fighting load, operating as a gunner, with an assistant gunner, firing from all positions, during daylight.

**STANDARD:** to attain a hit from a suitable position using spotting rounds and one rocket.

**PERFORMANCE STEPS:**

1. Load the SMAW.
2. Select a firing position.
3. Acquire the target in the sight.
4. Determine range to target.
5. Set the estimated range on the sight range selector drum (telescopic sight).
6. Place the SMAW in Condition 1.
7. Fire a spotting round and observe impact.
8. Make necessary adjustments until spotting rounds impact target or until the six (6) spotting rounds are expended.
9. Fire the SMAW.
10. Take immediate action if misfire occurs with either spotting rifle or launcher.
11. Move to alternate/supplemental position.

**REFERENCES:**

1. TM 08673A-10/1 Launcher, Assault Rocket 83MM (SMAW) MK 153 MOD 0
2. TM 08673A-25&P/2A Launcher, Assault Rocket 83MM (SMAW)

**MISCELLANEOUS:**

**ADMINISTRATIVE INSTRUCTIONS:** This task should be trained on the ISMT before expending live rounds. This task can be accomplished using training rounds. This task can be sustained through ISMT.

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**1371-MOBL-1019:** Assist in employing the Improved Ribbon Bridge (IRB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided a wet gap, an IRB set, Bridge Erection Boats with operators, tools and safety equipment.

**STANDARD:** To ensure supported units are capable of crossing a wet gap.

**PERFORMANCE STEPS:**

1. Identify major components.
2. Perform pre-operation checks.
3. Deploy the IRB.
4. Capture IRB components.
5. Connect bays.
6. Install rafting brackets as required.
7. Rig BEB to IRB for anchoring.
8. Rig BEB to IRB for rafting.
9. Operate ramp bays.
10. Disassemble bays.
11. Prepare bays for recovery.
12. Perform post-operation checks.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
  2. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
  3. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)
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**1371-CMOB-1020:** Construct wire obstacles

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given barbed wire, concertina wire, pickets, tools, tie wire and safety equipment.

**STANDARD:** To tie into existing natural or other man made obstacles so enemy movement/maneuvers are fixed, turned, blocked or disrupted.

**PERFORMANCE STEPS:**

1. Determine type of entanglement required.
2. Lay out pickets.
3. Install pickets.
4. Lay out wire.
5. Install wire.

**REFERENCES:**

1. FM 5-102 Countermobility
2. MCRP 3-17A Engineer Field Data

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** RANGE SAFETY OFFICER, CORPSMAN

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**1371-CMOB-1021:** Construct an abatis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given Class V material, a demolition kit, protective field equipment and references.

**STANDARD:** Ensuring that trees are felled a minimum of 5 feet above ground level and remain attached to the trunk; fallen trees are at least 3 to 4 meters apart; and that trees fall at a 45-degree angle toward the enemy, per the references.

**PERFORMANCE STEPS:**

1. Determine the direction of fall.
2. Calculate charges, to include kicker charges if necessary.
3. Conduct test shot.
4. Adjust calculations and/or charge placement as necessary.
5. Place charges.
6. Detonate explosives.
7. Improve obstacle with mines, concertina, etc.

**REFERENCES:**

1. FM 5-102 Countermobility
  2. FM 5-250 Explosives and Demolitions
  3. GTA 5-10-33 Demolition Card
  4. MCRP 3-17A Engineer Field Data
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**1371-CMOB-1022:** Construct log obstacles

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given an SL-3 complete pioneer tool kit, SL-3 complete chainsaw(s), barbed wire, safety equipment, and an area with standing or felled timber.

**STANDARD:** To tie into existing natural or other man made obstacles so enemy movement/maneuvers are fixed, turned, blocked or disrupted.

**PERFORMANCE STEPS:**

1. Determine the type(s) of log obstacle(s) required.
2. Procure timber.
3. Cut timber to required lengths.
4. Place timber.
5. Fill as necessary.

**REFERENCES:**

1. FM 5-102 Countermobility
  2. MCRP 3-17A Engineer Field Data
  3. Appropriate TM/Manufacture's Manual for Chainsaw
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**1371-CMOB-1023:** Create craters and ditches using explosives

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V material, a demolition kit, protective field equipment and references.

**STANDARD:** Ensuring that craters/ditches are the proper depth and width to fix, turn, block or disrupt enemy movement. If explosives are utilized to

create drainage-type ditches, finished ditches will slope at a rate of 2-4 feet of depth per 100 feet of run.

**PERFORMANCE STEPS:**

1. Determine whether a crater or ditch is required.
2. Determine number of boreholes required.
3. Create boreholes.
4. Select charge(s).
5. Prime charge(s).
6. Tamp charge(s).
7. Initiate demolitions.

**REFERENCES:**

1. FM 5-102 Countermobility
2. FM 5-250 Explosives and Demolitions
3. GTA 5-10-33 Demolition Card
4. MCRP 3-17A Engineer Field Data

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**1371-CMOB-1024:** Employ U. S. mines

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the proper authority, Class V (mines, AHD), demolition tools and equipment, and protective field equipment.

**STANDARD:** So that mines are emplaced and concealed according to the method of mine operation, the type of ground in which the mine is to be laid, and the type of ground cover available for camouflage; and result in the fixing, turning, blocking, or disrupting of enemy movement.

**PERFORMANCE STEPS:**

1. Select the appropriate mines.
2. Select the appropriate AHD as required.
3. Select the location for emplacement.
4. Prepare location for emplacement.
5. Emplace mine.
6. Employ anti-handling devices or tripwires as required.
7. Arm the mines.
8. Camouflage the mines as required.
9. Dispose of excess soil and refuse in sandbags.
10. Remove all tape, debris, and sandbags, restoring the area to its natural state.
11. Inventory tools, equipment, and safeties.
12. Recover safeties.
13. Locate mines.
14. Uncover mines.
15. Remove AHD if present and disarm the mines.

16. Remove/cut tripwires, as required.
17. Remove the mines.
18. Inventory all mines and dispose of properly.
19. Return area to natural state.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. MCRP 3-17A Engineer Field Data
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**1371-SURV-1025:** Place revetment materials

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given a defensive position, Class IV, engineer tools and equipment.

**STANDARD:** To provide appropriate levels of ballistic protection based on threat weapons considered.

**PERFORMANCE STEPS:**

1. Place sandbags to provide protection from enemy fire.
2. Place concertina to provide protection from enemy fire.
3. Place revetment materials to enhance stability of a position.
4. Construct retaining walls as required.
5. Camouflage position.

**REFERENCES:**

1. FM 21-75 Combat Skills of the Soldier
  2. FM 5-103 Survivability
  3. MCRP 3-17A Engineer Field Data
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**1371-SURV-1026:** Erect the Light Weight Screening System

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** As a member of a team, given Light Weight Screening System components and the requirement to camouflage positions, vehicles, or equipment.

**STANDARD:** Ensuring that the finished design breaks up the silhouette of the covered area, without creating unnatural shadows or contours.

**PERFORMANCE STEPS:**

1. Determine required modules of light weight screening.
2. Assemble modules into one net.
3. Place assembled modules over positions, vehicles, or equipment to be camouflaged.
4. Ensure appropriate blend is showing.
5. Inspect area frequently and upgrade camouflage as needed.

**REFERENCES:**

1. FM 20-3 Camouflage
  2. Appropriate Manufacturer's Assembly Manual/Instructions
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**1371-RECN-1027:** Obtain critical information for engineer reconnaissance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Member

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of an engineer reconnaissance team, provided a mission, a tactical scenario, blank engineer reconnaissance forms (DA Form 1711-R), equipment, and references.

**STANDARD:** Traveled ways, roadways, and heights must be accurate within +/- 6 inches; slopes must be accurate within +/- 1%; curve radii and gap widths must be accurate within +/- 1 meter; and velocities must be accurate within +/- .5 feet per second. All other essential engineer information must be annotated on DA Form 1711-R with appropriate symbols, descriptions, and 6-digit grid coordinates.

**PERFORMANCE STEPS:**

1. Determine roadway/traveled way width.
2. Determine height of overhead obstructions.
3. Determine percent of slope.
4. Determine radius of a curve.
5. Determine stream velocity.
6. Determine gap width.
7. Identify possible engineer resources.
8. Identify obstacles by type and location (6-digit grid coordinate).
9. Fill out DA Form 1711-R.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. GTA 5-2-5 Engineer Reconnaissance
  3. MCRP 3-17A Engineer Field Data
  4. MCRP 3-17B Engineer Forms and Reports
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**17005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1371-XENG-2001:** Design wood frame structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Operations Chief, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided construction drawings, blueprints or specifications, writing/sketching materials, a calculator, and references.

**STANDARD:** The design must conform to the construction drawings, blueprints, or specifications; identify the type of materials and proper spacing; and support all loads considered, per the references.

**PERFORMANCE STEPS:**

1. Review construction drawings, blueprints or specifications.
2. Prepare a materials takeoff sheet.
3. Prepare a bill of materials.

**REFERENCES:**

1. FM 5-426 Carpentry
  2. TM 5-704 Construction Print Reading in the Field
- 

**1371-XENG-2002:** Layout wood frame structure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Construction NCO, Squad Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a construction site, construction blueprints/drawings, design specifications, an engineer carpenter's kit, Class IV, and the references.

**STANDARD:** Ensuring that building corners are exactly 90 degrees; truss jigs are built to the specified pitch; the sum of stair stringer risers and treads is between 17 and 19 inches; and walls are level and plumb.

**PERFORMANCE STEPS:**

1. Lay out a rectangle.
2. Set batter board posts.
3. Drive corner stakes.
4. Install batter boards to finished heights.
5. Run building lines.



6. Square building lines.
7. Lay out wall components.
8. Lay out truss components.
9. Lay out stair components.

**REFERENCES:**

1. FM 5-426 Carpentry
2. TM 5-704 Construction Print Reading in the Field

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** 1361 Surveyor

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**1371-XENG-2003:** Determine required concrete mixture

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided construction drawings, blueprints, specifications, writing materials, a calculator, and the reference.

**STANDARD:** To achieve proper PSI per the specifications.

**PERFORMANCE STEPS:**

1. Determine the type of cement to be used.
2. Identify water and aggregate for suitability.
3. Determine desired slump.
4. Determine percentage of air entrainment, as required.
5. Determine amount of water.
6. Determine a water:cement ratio.
7. Determine amount of cement.
8. Determine loose volume of gravel.
9. Convert weights to absolute volumes.
10. Determine weight of sand.
11. Determine loose volume of sand.
12. List final proportions for a one cubic yard batch.
13. Perform field moisture test on the aggregates and adjust mix design to account for aggregate moisture.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
- 

**1371-XENG-2004:** Design a concrete slab on grade

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Construction NCO, Squad Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, writing materials, a calculator, and references.

**STANDARD:** Structural design must accommodate all dead and live loads considered and form design must include all reinforcement, joints and/or anchor bolts as required in the specifications, per the references.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Determine slab classification.
3. Determine minimum compressive strength.
4. Determine flexural tensile stress.
5. Determine equivalent static load and correct as necessary.
6. Determine slab thickness.
7. Determine minimum cement content.
8. Design form(s).
9. Erect form(s).
10. Place reinforcement, joints, and anchors in forms as required.

**REFERENCES:**

1. FM 5-426 Carpentry
2. FM 5-428 Concrete Masonry

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**1371-XENG-2005:** Design concrete structures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Operations Chief, Platoon Guide, Platoon Sergeant, Section SNCOIC

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided specifications, writing/sketching materials, a calculator, and the reference.

**STANDARD:** To specify type of materials to be used, proper spacing of all components, and quantity and type of material required for finished structures capable of supporting all loads considered per the specifications and the reference.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Design a concrete footing.
3. Design a concrete wall.
4. Design a reinforced concrete structure.

5. Design a concrete block structure.
6. Generate a Bill of Materials for each type of design.

**REFERENCES:**

1. FM 5-428 Concrete Masonry

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** 1361 Surveyor

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**1371-XENG-2006:** Employ construction shop component set

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Construction NCO, Squad Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a construction shop with live power outlets, construction shop set #2 or set #3, and references.

**STANDARD:** To ensure operability of all required components per the references.

**PERFORMANCE STEPS:**

1. Determine shop set electrical power requirements.
2. Assemble construction shop components set(s).
3. Select appropriate component for a given task.
4. Operate component(s).
5. Disassemble construction shop components set(s).

**REFERENCES:**

1. Appropriate Manufacturer's Assembly Manual/Instructions
  2. Appropriate Technical Manuals
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**1371-XENG-2007:** Estimate requirements for engineer operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Construction NCO, Fire Team/Section Leader, Operations Chief, Platoon Guide, Platoon Sergeant, Squad Leader

**GRADES:** CPL, SGT, SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission, construction drawings, blueprints, specifications, calculator, writing materials, DA Form 2702, and references.

**STANDARD:** Listing all personnel and equipment resources necessary to accomplish mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review the mission.
2. Prepare materials estimates/materials takeoff list.
3. Prepare a Bill of Materials (BOM) on DA Form 2702 or other locally approved form.
4. Prepare manpower estimates.
5. Prepare equipment estimates.

**REFERENCES:**

1. FM 5-412 Project Management
  2. MCRP 3-17A Engineer Field Data
  3. MCWP 3-17 Engineer Operations
  4. MCWP 5-1 Marine Corps Planning Process
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**1371-XENG-2008:** Plan a cantonment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Operations Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, size and type of unit to occupy the cantonment, and references.

**STANDARD:** To meet or exceed the unit requirements and the commander's intent, while accounting for future expansion, per the references.

**PERFORMANCE STEPS:**

1. Analyze the METT-TSL.
2. Identify Requests for Information (RFI).
3. Conduct site/map reconnaissance.
4. Determine cantonment location.
5. Plan road network.
6. Select facilities required to support the cantonment.
7. Determine utility requirements.
8. Determine fuel requirements.
9. Determine drainage requirements.
10. Develop obstacle/barrier plan as required.
11. Develop survivability plan as required.
12. Determine bill of materials (BOM).
13. Determine camp layout.
14. Determine task organization of personnel and equipment.
15. Determine logistical support requirements.
16. Establish a project schedule.
17. Illustrate final design.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FM 5-102 Countermobility
  3. FM 5-103 Survivability
  4. FM 5-412 Project Management
  5. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  6. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
  7. FM 5-434 Earthmoving Operations
  8. MCRP 3-17A Engineer Field Data
  9. MCRP 4-11.1D Field Hygiene and Sanitation
  10. MCWP 3-17 Engineer Operations
  11. MCWP 4-11.6 Bulk Liquid Operations
  12. MCWP 4-25.5 Bulk Liquids Operations
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**1371-XENG-2009:** Requisition required materials

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Construction NCO, Section Leader, Squad Leader

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a mission and bill(s) of materials.

**STANDARD:** Necessary to accomplish the mission in accordance with accepted purchasing and accounting procedures.

**PERFORMANCE STEPS:**

1. Review the mission.
2. Review the bill(s) of materials.
3. Requisition the required materials through accepted supply procedures.
4. Requisition the required materials through accepted open purchase procedures.

**REFERENCES:**

1. UM 4400-124 FMF SASSY Using Unit Procedures
  2. Local Standard Operating Procedures (SOP)
- 

**1371-XENG-2010:** Establish project/operation schedules

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Company Gunnery Sergeant, Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, construction drawings/blueprints, specifications, a calculator, writing materials, activity estimate sheets, and the reference.

**STANDARD:** Detailing all personnel, equipment, and materials necessary to accomplish the mission while establishing a defined duration for each subtask and the overall project/operation and graphically depict the schedule per the reference.

**PERFORMANCE STEPS:**

1. Review the mission.
2. Determine activities/tasks necessary to complete the project.
3. Arrange activities/tasks in logical sequence.
4. Complete activity estimate sheets.
5. Identify critical tasks.
6. Graphically depict schedule.
7. Update schedule throughout duration of project/operation.

**REFERENCES:**

1. FM 5-412 Project Management
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**1371-MOBL-2011:** Employ the Medium Girder Bridge (MGB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided a completed MGB Pro Forma, a gap, Medium Girder Bridge set, tools, a launch vehicle, personnel and references.

**STANDARD:** To meet design specifications and intended bridge classification per the Pro Forma, while observing safety precautions and technical specifications during build, boom and launch per the references.

**PERFORMANCE STEPS:**

1. Review the references and the Pro Forma.
2. Make crew assignments and brief crews.
3. Lay out the site based on critical pallet loads.
4. Install front roller beam.
5. Build end of bridge (EOB) +1.
6. Install rear roller beam.
7. Build and boom bridge, to include launching nose configuration, per the Pro Forma and the TM specifications.
8. Launch bridge.
9. Set bridge on deck.
10. Dress bridge.
11. Anchor as required.
12. Retrieve the MGB.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
2. TM 08676A-10/1-1 Operators Manual Medium Girder Bridge
3. TM 5-5420-212-12 Medium Girder Bridge
4. TM 5-5420-212-12-1 Link Reinforcement Set

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**1371-MOBL-2012:** Operate Bridge Erection Boat (BEB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Licensing NCO, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a body of water, a bridge erection boat, tools, personnel, personal protective equipment (PPE), and the reference.

**STANDARD:** Using controls to maneuver 360 degrees around a stationary buoy while maintaining a 1 yard radius; perform a series of pier touches; and a pier side docking maneuver, all without damage to equipment while observing all safety and navigational precautions.

**PERFORMANCE STEPS:**

1. Inspect the launch area.
2. Perform before/during/after operations checks on the boat/engine, as required.
3. Perform start up procedures.
4. Maneuver the boat using the buckets.
5. Maneuver the boat using the helm.

**REFERENCES:**

1. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2

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**1371-MOBL-2013:** Employ the Improved Ribbon Bridge (IRB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided a complete IRB design, a wet gap crossing site, IRB components, bridge erection boats, fuel, IRB tools and equipment, motor transport support, personnel, personal protective equipment (PPE), and references.

**STANDARD:** To provide force mobility, employing the IRB within the time frame listed in the design criteria, while observing safety precautions per the references.

**PERFORMANCE STEPS:**

1. Review the references and the design specifications.
2. Brief crew on assignments.
3. Don all PPE.
4. Perform pre-operation checks and services on boats and IRB bays.
5. Deploy BEBs.
6. Deploy IRB bays.
7. Capture IRB bays.
8. Connect IRB bays.
9. Position the bridge.
10. Anchor the bridge.
11. Provide up-stream, in water security measures.
12. Retrieve the bridge.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
  2. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
  3. TM 5420-209-12 Operators and Organizational Manual Improved Floating Bridge (Ribbon Bridge)
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**1371-MOBL-2014:** Conduct military rafting operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, provided mission specifications, a wet gap crossing site, IRB components, bridge erection boats, fuel, IRB tools, motor transport support, personnel, personal protective equipment (PPE), and references.

**STANDARD:** To provide force mobility while maintaining proper speed and adhering to navigational and operational safety requirements per the references.

**PERFORMANCE STEPS:**

1. Review the references and specifications.
2. Brief/instruct the crew on the mission/assignment.
3. Inspect IRB components.
4. Don all PPE.
5. Conduct pre-operation checks and services on BEBs.
6. Launch BEBs.
7. Launch IRB components (ramp and interior bays as required in specifications).
8. Capture IRB components.



9. Maneuver IRB components into position.
10. Construct raft.
11. Re-position BEBs and rig to raft according to specifications.
12. Load raft.
13. Following the commands of the raft commander, maneuver the raft to the far shore, debark equipment, repeat cycle.
14. Maintain rafting schedule.
15. Perform during-operation checks of the BEBs and IRB.
16. Perform post-operation checks and services of the BEBs and IRB.

**REFERENCES:**

1. MCRP 3-17A Engineer Field Data
  2. TM 5-1940-277-10 Operators Manual Bridge Erection Boat USCSBMK 1&2
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**1371-MOBL-2015:** Determine raft size required for wet gap crossing

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission specifying a military load class requirement, completed engineer reconnaissance reports with hydrographic information, and references.

**STANDARD:** To meet mission requirements based on available resources and to deliver the troops and equipment across the gap with a minimum number of trips per the references.

**PERFORMANCE STEPS:**

1. Review the reconnaissance reports.
2. Determine raft size based on MLC.
3. Determine rafting configuration based on current velocity.
4. Determine rafting cycle time.
5. Determine total force crossing time.
6. Determine logistical requirements.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. MCRP 3-17A Engineer Field Data
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**1371-MOBL-2016:** Determine bridging assets required to span a gap

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission specifying a military load class requirement, a map, reconnaissance report(s), and references.

**STANDARD:** For a wet gap crossing, determine the length of bridge, number and type of IRB bays required, number of BEBs required, anchoring system to be employed, all logistical requirements, and calculate total time to construct the bridge per the references. For a dry gap crossing, determine the MGB configuration, calculate pallets required, determine all logistical requirements, and calculate total time to construct the bridge per the references.

**PERFORMANCE STEPS:**

1. Review the mission, reconnaissance reports, maps, and any other intelligence data available.
2. Evaluate potential crossing sites.
3. Select the best crossing means.
4. Select final bridge site.
5. Calculate required bridge length.
6. For MGB, fill out Pro Forms as necessary.
7. Determine bridging assets required, i.e., number of bays, number of boats, number of pallets.
8. Determine crew size.
9. Determine all logistical support required.
10. Calculate total time to construct the bridge.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. FM 5-446 Military Non-Standard Fixed Bridges
  3. MCRP 3-17A Engineer Field Data
  4. TM 5-5420-212-12 Medium Girder Bridge
  5. TM 5-5420-212-12-1 Link Reinforcement Set
- 

**1371-MOBL-2017:** Design a non-standard bridge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a requirement for non-standard gap crossing, completed engineer reconnaissance forms, a design MLC, and references.

**STANDARD:** Showing all calculations for abutments (if required), substructure (if required), and superstructure components that will meet or exceed required MLC per the references.

**PERFORMANCE STEPS:**

1. Review engineer reconnaissance reports/conduct site reconnaissance.

2. Determine the bridge type based on gap size and MLC.
3. Design the superstructure.
4. Design the substructure, if required.
5. Design the abutments, if required.
6. Calculate the bill of materials.
7. Determine logistical support requirements.
8. Illustrate final design.

**REFERENCES:**

1. FM 5-446 Military Non-Standard Fixed Bridges
  2. MCRP 3-17A Engineer Field Data
  3. NAVEDTRA 10648-6 Builder 3&2
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**1371-RECN-2018:** Conduct engineer reconnaissance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, maps, personnel and equipment, appropriate reconnaissance reporting forms, overlay material, and references.

**STANDARD:** To classify roads, routes, and bridges; evaluate tunnels, fords, and ferry sites; identify obstacles; identify suitable bypasses; and record any other relevant engineer information on the appropriate reconnaissance forms per the references. All information will be transferred to a map overlay using correct engineer/tactical symbols.

**PERFORMANCE STEPS:**

1. Analyze METT-TSL.
2. Review the map of the route to be taken.
3. Proceed to assigned objective.
4. Calculate route width (minimum and maximum).
5. Determine shoulder condition (if any).
6. Determine surface material.
7. Plot length of passable route.
8. List obstacles.
9. Indicate special weather conditions which may affect the route.
10. Identify constrictions.
11. Determine overhead clearance.
12. Classify road(s).
13. Record cover and concealment.
14. Identify underpasses.
15. Calculate tunnel specifications.
16. Classify bridge(s) (if any).
17. Determine wet gap fording/bridging/ferrying sites.
18. Identify suitable bypasses.
19. Classify the route.
20. Submit reconnaissance report(s) and overlays.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
2. FMFM 13 MAGTF Engineer Operations
3. GTA 5-2-5 Engineer Reconnaissance
4. GTA 5-7-13 Bridge Classification Booklet
5. MCRP 3-17A Engineer Field Data
6. MCRP 3-17B Engineer Forms and Reports

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**1371-MOBL-2019:** Construct Tactical Landing Zones (TLZ)/Forward Operating Bases (FOB)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission specifying number and/or type(s) of aircraft, DA Form 1711-R, engineer tools and equipment, EAF support, AM-2 matting and accessories, and personnel.

**STANDARD:** To provide aircraft landing sites that meet structural and geometric design criteria for the type(s)/number(s) of aircraft anticipated for a TLZ, a surfaced FOB or an unsurfaced FOB per the mission specifications.

**PERFORMANCE STEPS:**

1. Analyze METT-TSL and reconnaissance forms, if provided.
2. Determine whether mission calls for a TLZ or a FOB.
3. Conduct site reconnaissance, keying on soil composition, drainage and obstructions.
4. Determine appropriate configuration.
5. Determine matting requirement (for FOB).
6. Calculate scope of engineer effort to prepare site.
7. Prepare site.
8. Lay mat as required (for FOB).
9. Install marking.

**REFERENCES:**

1. FM 5-430-00-2 Planning and design of roads, airfields, and heliports in the theater of operations--Airfield and Heliport design
2. MCRP 3-17B Engineer Forms and Reports
3. MCRP 4-11.3E Multi-service Helicopter Sling Load: Vols I,II and III
4. NAVAIR 51-60-A-1 Installation, Maintenance, Repackaging and Illustrated Parts Breakdown, AM-2 Airfield Mat and Accessories

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**1371-MOBL-2020:** Repair damaged airfields (ADR)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a damaged airfield, an SL-3 complete airfield damage repair (ADR) kit, heavy equipment support, a borrow pit, personnel, and communications equipment.

**STANDARD:** To meet surface roughness criteria in order to establish a functional Minimum Operating Strip (MOS) capable of launching and recovering aircraft.

**PERFORMANCE STEPS:**

1. Brief damage assessment teams.
2. Conduct damage assessment.
3. Once airfield commander has selected an MOS, have EOD clear UXO.
4. Repair spalls and craters to meet surface roughness criteria.
5. Install FOD cover on repaired crater(s).

**REFERENCES:**

1. MCWP 3.21.1 Aviation Ground Support
  2. Navy/Marine Corps Runway Crater Repair (Interim Handbook), Navy
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**1371-REC-2021:** Conduct demolition reconnaissance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission to conduct a reconnaissance of a target designated for demolition, map of area, compass, measuring tape, DA Form(s) 2203-R, and references.

**STANDARD:** Complete all blocks of the DA Form(s) 2203-R to determine quantity of explosives required to produce the desired effect on the target(s); determine the time, labor, and logistics necessary to accomplish the mission; and capture a sketch of the proposed target(s) per the references.

**PERFORMANCE STEPS:**

1. Conduct map reconnaissance.
2. Proceed to assigned objective.
3. Estimate explosives and logistics required.
4. Estimate personnel and time required to complete mission.
5. Identify bypass requirements.
6. Sketch side views of target and cross sections of members to be cut.
7. Sketch a plan of the firing circuits and firing points.
8. Submit DA Form 2203-R.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. FM 5-250 Explosives and Demolitions
  3. GTA 5-10-33 Demolition Card
  4. GTA 5-7-13 Bridge Classification Booklet
  5. MCRP 3-17A Engineer Field Data
  6. MCRP 3-17B Engineer Forms and Reports
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**1371-MOBL-2022:** Employ M58/M68 linear demolition charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an M58/M68 Linear Demolition Charge, MK 22 Rocket, MK 155 Trailer Mounted Launcher, towing vehicle, protective field equipment, and an area to fire the charge.

**STANDARD:** To breach a lane through a minefield or other linear obstacles as directed to provide continuation of force mobility.

**PERFORMANCE STEPS:**

1. Inspect all equipment.
2. Set up M58/M68/M155 for employment.
3. Perform all circuit/pre-operational checks.
4. Move to firing area, ensuring proper standoff distance is achieved.
5. Fire the rocket.
6. Fire the charge.
7. Perform immediate actions for misfire (if required).

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 5-101 Mobility
  3. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
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**1371-MOBL-2023:** Employ the APOBS

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given an anti-personnel minefield or wire obstacle, an MK-7 Mod 1 Antipersonnel Obstacle Breaching System (APOBS),

demolition tools and equipment, and protective field equipment.

**STANDARD:** Using mechanical initiation or command mode initiating to clear a lane through the obstacle while observing all safety precautions.

**PERFORMANCE STEPS:**

1. Inspect all equipment.
2. Set up the MK-7 MOD 1 APOBS.
3. Perform circuit/pre-deployment checks.
4. Move to firing area.
5. Ensure proper standoff.
6. Initiate the system.
7. Perform immediate action for misfire (if required).

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. TM 013750-13&P Operators Manual MK-7 MOD. 1 Anti-Personnel Obstacle Breaching System (APOBS)
- 

**1371-MOBL-2024:** Conduct obstacle breaching operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Platoon Guide, Platoon Sergeant, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a mission specifying available supporting arms, personnel with full combat load per T/O weapon, demolitions tools and equipment, engineer equipment, and class V.

**STANDARD:** To reduce linear obstacles or breach a lane through a minefield per MAGTF breaching fundamentals.

**PERFORMANCE STEPS:**

1. Analyze METT-T and any available reconnaissance reports.
2. Organize obstacle clearing detachment(s).
3. Proceed to final assembly area.
4. Verify obstacle location(s) and possible bypass route(s).
5. Move to obstacle while suppressing enemy fire.
6. Coordinate obscuration of entire obstacle with supporting arms.
7. Direct reduction of the obstacle(s) to make a breach lane.
8. Set up security on near side of obstacle.
9. Proof the lane.
10. Mark the lane.
11. Control movement through the breach.
12. Conduct turnover of breaching lane(s) to supporting units.
13. Consolidate and re-supply the breach force.

**REFERENCES:**

1. FM 5-101 Mobility
  2. FM 5-250 Explosives and Demolitions
  3. FM 90-13-1 Combined Arms Breaching Operations
  4. MCRP 3-17A Engineer Field Data
  5. MCWP 3-17.3 MAGTF Breaching Operations
  6. TM 013750-13&P Operators Manual MK-7 MOD. 1 Anti-Personnel Obstacle Breaching System (APOBS)
  7. TM 08982A-14&P/2B Operator's Manual for MK 155 Mine Clearance System
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**1371-DEMO-2025:** Engage targets with expedient demolitions

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a target, demolitions tools and equipment, class V, improvised materials, and protective field equipment.

**STANDARD:** To produce the desired effect on the target equivalent to the effect of a similar conventional explosive or demolition charge.

**PERFORMANCE STEPS:**

1. Analyze the target.
2. Construct a platter charge.
3. Construct an expedient claymore mine.
4. Construct a grape shot directional charge.
5. Construct an omni (360 degree) charge.
6. Construct an expedient shaped charge.
7. Construct an expedient flame mine.
8. Construct an expedient bangalore torpedo.
9. Engage the target.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. GTA 5-10-33 Demolition Card
  3. MCRP 3-17A Engineer Field Data
  4. SWO 60-AA-MMA-010 Demolition Materials
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**1371-DEMO-2026:** Use specialized explosives

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT



**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a mission to destroy or disable a target, demolition tools and equipment, class V material, protective field equipment and references.

**STANDARD:** To produce the desired effect on the target per the mission requirements.

**PERFORMANCE STEPS:**

1. Review demo target reconnaissance information.
2. Choose proper explosive.
3. Calculate correct quantity of explosive.
4. Place the charge on the target.
5. Prime the explosive.
6. Detonate the explosive.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. GTA 5-10-33 Demolition Card
  3. SWO 60-AA-MMA-010 Demolition Materials
  4. TM 9-1300-214 Military Explosives
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**1371-DEMO-2027:** Employ a ballistic disk

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a designated target, ballistic disk kit, demolition tools and equipment, protective field equipment and class V material.

**STANDARD:** To produce the desired effect on the target.

**PERFORMANCE STEPS:**

1. Analyze the target.
2. Select the appropriate ballistic disk.
3. Assemble the charge.
4. Prepare a firing system.
5. Position the charge.
6. Prime the charge.
7. Detonate the charge.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. Appropriate Manufacturer's Assembly Manual/Instructions
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**1371-MOBL-2028:** Perform hasty soil analysis

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an unidentified soil sample, an SL-3 complete soil test kit and references.

**STANDARD:** To obtain a two-letter USCS classification, CBR, and moisture content per the references.

**PERFORMANCE STEPS:**

1. Obtain a soil sample.
2. Perform a visual examination of the soil.
3. Separate gravel.
4. Conduct field identification tests on the -40 material.
5. Determine the USCS classification.
6. Determine the CBR.
7. Determine the moisture content.
8. Record and report results.

**REFERENCES:**

1. FM 5-410 Military Soils Engineering
  2. FM 5-530 Materials Testing
  3. MCRP 3-17A Engineer Field Data
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**1371-MOBL-2029:** Design expedient drainage structures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a drainage structure requirement, a map, and references.

**STANDARD:** To intercept, collect, and remove surface water flowing toward a designated area from adjacent areas per the references.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Calculate area of waterway/peak run off.
3. Determine type of drainage structure required.
4. Calculate size/amount of culvert required.
5. Design a drainage ditch.

**REFERENCES:**

1. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  2. MCRP 3-17A Engineer Field Data
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**1371-CMOB-2030:** Recommend obstacle placement

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Guide, Squad Leader

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, an area map, reconnaissance reports and references.

**STANDARD:** That ties into existing natural or other manmade obstacles so that enemy movement/maneuvers are fixed, turned, blocked, or disrupted in support of the concept of operations per the commander's intent.

**PERFORMANCE STEPS:**

1. Analyze the mission.
2. Analyze avenues of approach.
3. Analyze engagement areas, battle positions, and locations of weapons systems.
4. Determine possible obstacle locations and types.
5. Determine the commander's obstacle priorities.
6. Determine resources.
7. Determine actual work sequence.
8. Determine task organization required.
9. Determine coordination required.

**REFERENCES:**

1. FM 5-102 Countermobility
  2. MCRP 3-17A Engineer Field Data
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**1371-CMOB-2031:** Employ booby traps

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the proper authority to set booby traps, Class V, demolition tools, a blank DA Form 1355 and protective field equipment.

**STANDARD:** To slow the enemy's advance; deny the enemy use of facilities or material; warn of enemy approach; or deny the enemy use of terrain not covered by direct fire.

**PERFORMANCE STEPS:**

1. Review the mission.
2. Perform area reconnaissance.
3. Determine location for booby traps.
4. Determine type of firing device to be used.
5. Determine types and amount of explosive to be used.
6. Complete the firing chain.
7. Arm the booby traps.
8. Camouflage the booby traps and return the area to its natural state.
9. Record the booby traps on DA Form 1355.
10. Turn in all safety pins and clips to the NCOIC.
11. Submit required reports.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. FM 21-75 Combat Skills of the Soldier
3. FM 5-250 Explosives and Demolitions
4. MCRP 3-17B Engineer Forms and Reports

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**1371-CMOB-2032:** Destroy bridges using explosives

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Platoon Guide, Platoon Sergeant, Squad Leader

**GRADES:** SGT, SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, a bridge reconnaissance report, personnel, Class V, a demolition kit, protective field equipment and references.

**STANDARD:** Ensuring that the demolition results in either a gap that exceeds the enemy's assault bridging capability by 5 meters, or that leaves demolished components which are unable to provide sufficient bearing capacity for enemy assault breaching assets.

**PERFORMANCE STEPS:**

1. Review the mission/bridge reconnaissance report.
2. Determine bridge category.
3. Design collapse mechanism.
4. Select method of attack.
5. Establish security.
6. Calculate charges.
7. Place charges.
8. Initiate demolition.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions

2. GTA 5-10-33 Demolition Card
3. MCRP 3-17A Engineer Field Data

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**1371-CMOB-2033:** Emplace a hasty protective row minefield

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Guide, Platoon Sergeant, Squad Leader

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical position, an operations order, personnel, compass, map, protractor, Class V, Class IV, DA Form 1355-1-R, mine detectors, probes, sandbags, engineer tools and protective field equipment.

**STANDARD:** Outside of hand grenade range but within the range of small caliber weapons, and tied into existing natural or manmade obstacles in order to prevent direct enemy assault on a position.

**PERFORMANCE STEPS:**

1. Receive permission to lay mines.
2. Conduct map/site reconnaissance.
3. Establish a Reference Point between unit position and tentative minefield.
4. Locate and place row markers for the beginning of the rows (a minimum of two rows).
5. Determine mine spacing for each row.
6. Emplace mines.
7. Locate and place row markers for the end of the rows.
8. Record all row markers on 1355-1-R.
9. Record a permanent landmark on the 1355-1-R.
10. Arm mines.
11. Verify count of all pins and clips and turn in to NCOIC.
12. Complete 1355-1-R.
13. Submit required reports to higher headquarters.
14. Transfer minefield as required.
15. Conduct mine removal as required.
16. Clean, repack or dispose of mine per unit SOP.
17. Submit required reports to higher headquarters.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

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**1371-CMOB-2034:** Emplace a row minefield

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical position, an operations order, personnel, compass, map, protractor, Class V, Class IV, DA Form 1355, mine detectors, probes, sandbags, engineer tools and protective field equipment.

**STANDARD:** To tie into existing natural or other manmade obstacles so that enemy movement/maneuvers are fixed, turned, blocked, or disrupted per the concept of operations.

**PERFORMANCE STEPS:**

1. Review the mission, the map of the area, and reconnaissance reports.
2. Determine enemy avenues of approach for armor and/or infantry.
3. Determine location for observation posts.
4. Determine logistical requirements for mine dump.
5. Identify key terrain features forming natural boundaries and obstacles.
6. Set up site security.
7. Locate a reference point.
8. Submit required reports to higher headquarters (Intent, Initiation, Progress, Completion, Transfer).
9. Emplace mines as required.
10. Verify the arming of all mines.
11. Verify that mines are buried/camouflaged.
12. Verify count of all safety pins and clips and turn-in to NCOIC.
13. Record minefield on DA Form 1355.
14. Submit DA Form 1355.
15. Verify the disarming of all mines.
16. Remove mines.
17. Destroy the minefield record, if required.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
2. MCRP 3-17A Engineer Field Data
3. MCRP 3-17B Engineer Forms and Reports

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**1371-SURV-2035:** Design survivability positions

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a force protection requirement and references.

**STANDARD:** to counteract the known effects of enemy direct and indirect fire weapons.

**PERFORMANCE STEPS:**

1. Submit Requests for Information (RFI) to S/G-2.
2. Determine types of positions required.
3. Design positions.
4. Determine material requirements.
5. Calculate the time required for construction.
6. Submit designs/work estimates.

**REFERENCES:**

1. FM 5-103 Survivability
  2. MCRP 3-17A Engineer Field Data
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**1371-MANT-2036:** Maintain MIMMS program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Calibrations NCO, Construction NCO, Platoon Guide, Squad Leader, Squad Member

**GRADES:** CPL, SGT, SSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Marine Corps Order P4790.2\_, TM 4700-15/\_, UM 4700-5, and blank maintenance forms.

**STANDARD:** To ensure maintenance management functions, maintenance resources, production, and information conform to unit MMSOP requirements per the references.

**PERFORMANCE STEPS:**

1. Maintain a publications library.
2. Complete a Consolidated Engineer Equipment Log and Service Record (NAVMC 10524).
3. Complete an Equipment Repair Order (NAVMC 10245).
4. Complete an ERO Shopping/Transaction List (NAVMC 10925).
5. Complete Engineer Equipment Operational Records (NAVMC 10523).
6. Complete a General Purpose Transaction Document (NAVMC 696).
7. Analyze Daily Processing Report (DPR).
8. Reconcile outstanding supply requests.
9. Complete modification control records.
10. Direct maintenance related programs.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  3. UM 4790-5 Users Manual MIMMS
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**1371-MANT-2037:** Supervise an organizational maintenance program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided Engineer Equipment Operational Record (NAVMC 10523), Consolidated Engineer Equipment Log (NAVMC 10561), notional T/E, notional T/O and references.

**STANDARD:** To ensure maintenance program conforms to unit MMSOP and the references.

**PERFORMANCE STEPS:**

1. Supervise preventive maintenance scheduling.
2. Supervise preventive maintenance documentation.
3. Analyze preventive maintenance indicators.
4. Manage maintenance information.
5. Manage maintenance of equipment records.
6. Supervise usage of Consolidated Engineer Equipment Log (NAVMC 10524).
7. Supervise usage of Engineer Equipment Operational Record (NAVMC 10523).
8. Supervise usage of Preventive Maintenance Roster (NAVMC 10561).
9. Supervise maintenance of resource records.

**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
2. UM 4790-5 Users Manual MIMMS

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**1371-MANT-2038:** Analyze maintenance management records

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Daily Process Report (DPR), Daily Transaction Listing (DTL), Equipment Repair Order (NAVMC 10245), Equipment Repair Order Shopping List (NAVMC 10925), and the references.

**STANDARD:** To ensure that maintenance functions are processed per the references.

**PERFORMANCE STEPS:**

1. Analyze Daily Process Report (DPR).
2. Analyze requisition procedures.
3. Analyze Daily Transaction Listing (DTL).
4. Analyze equipment records.



**REFERENCES:**

1. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  2. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
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**1371-ADMN-2039:** Evaluate minefield records/reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a completed 1355-R or 1355-1-R and references.

**STANDARD:** To identify any deficiencies concerning emplacement, marking of minefields, and reporting of minefield data per the references.

**PERFORMANCE STEPS:**

1. Examine 1355-R or 1355-1-R for deficiencies.
2. List all deficiencies.
3. Return to originator for corrections if necessary.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. MCRP 3-17A Engineer Field Data
  3. MCRP 3-17B Engineer Forms and Reports
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**1371-ADMN-2040:** Evaluate engineer situation reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an engineer situation report and references.

**STANDARD:** To summarize information from each heading of the situation report, describe the impact of each heading on engineer operations, and act on the information as required.

**PERFORMANCE STEPS:**

1. Review the appropriate section(s) of the references.
2. Examine the situation report.
3. Prepare situation report evaluation.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. MCRP 3-17A Engineer Field Data
  3. MCRP 3-17B Engineer Forms and Reports
- 

**1371-ADMN-2041:** Evaluate engineer reconnaissance reports

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a completed DA Form 1711-R, an operations plan, an area tactical map, and references.

**STANDARD:** To determine the impact of engineer-related activities on the operations plan.

**PERFORMANCE STEPS:**

1. Review appropriate section(s) of the references.
2. Examine the DA Form 1711-R.
3. Prepare reconnaissance report evaluation.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. MCRP 3-17A Engineer Field Data
  3. MCRP 3-17B Engineer Forms and Reports
- 

**1371-ADMN-2042:** Analyze operations order to determine engineer tasks/requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order and the references.

**STANDARD:** To identify all appendices relating to engineer operations and list engineer tasks, and requirements per the references.

**PERFORMANCE STEPS:**

1. Examine the operations order.
2. Review all annexes, appendices, tabs and enclosures for engineer tasking.
3. List all engineer support requirements.

**REFERENCES:**

1. FMFM 3-1 Command and Staff Action
  2. MCWP 3-17 Engineer Operations
  3. MCWP 5-1 Marine Corps Planning Process
- 

**1371-ADMN-2043:** Assist in preparation of engineer estimates

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, an operations order, reconnaissance reports, intelligence estimates, and references.

**STANDARD:** To recommend engineer courses of action that supports the concept of operations and the commander's intent.

**PERFORMANCE STEPS:**

1. Review the mission, reconnaissance reports, and other intelligence available.
2. Assist in the preparation of the engineer estimate.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. MCWP 5-1 Marine Corps Planning Process
- 

**1371-ADMN-2044:** Assist in preparation of engineer portions of an operations order

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a requirement for an operations order, commander's intent/scheme of maneuver, a mission statement, task organization, basic operational graphics, pencil and paper, and references.

**STANDARD:** By identifying and developing annexes and appendices for inclusion in the operations order per the references.

**PERFORMANCE STEPS:**

1. Review appropriate section(s) of references.
2. Coordinate input from subordinate engineer elements.

3. Conduct coordination with task force.
4. Assist in preparation of engineer documents.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 3-1 Command and Staff Action
  4. MCWP 5-1 Marine Corps Planning Process
- 

**1371-ADMN-2045:** Advise employment of engineer assets

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, a notional T/O, notional T/E, and references.

**STANDARD:** To recommend estimates of capability for a unit regarding engineer equipment, personnel, and available resources per the references.

**PERFORMANCE STEPS:**

1. Review the commander's intent.
2. Review T/O and T/E.
3. Prepare a verbal or written recommendation for employment of engineer assets.

**REFERENCES:**

1. MCWP 3-17 Engineer Operations
  2. MCWP 3.21.1 Aviation Ground Support
  3. MCWP 4-11.5 SeaBee Operations in the MAGTF
- 

**1371-ADMN-2046:** Deliver a brief on the engineer situation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Guide, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation and an operations order.

**STANDARD:** To provide a rapid oral description of the current status of engineer activities, capabilities, and limitations.

**PERFORMANCE STEPS:**

1. Review the operations order and commander's intent.
2. Review the engineer situation.
3. Develop a briefing outline for the engineer situation.
4. Brief engineer situation to the commander.

**REFERENCES:**

1. FM 5-100 Engineers in Combat Operations
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 3-1 Command and Staff Action
  4. MCWP 5-1 Marine Corps Planning Process
- 

**1371-ADMN-2047:** Prepare non-nuclear target folder

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Operations Chief

**GRADES:** MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided DA Form 2203-R, blank target folder, photograph of target, maps of target area, drawing paper, pen or pencil, and the references.

**STANDARD:** To meet mission requirements per the references.

**PERFORMANCE STEPS:**

1. Review DA Form 2203-R.
2. Review the references.
3. Complete the three sections of the target folder.
4. Ensure all sections of the target folder are completed in specific languages.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. STANAG 2123 Obstacle Folder
- 

**1371-ADMN-2048:** Arrange external support for engineer projects/operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Company Gunnery Sergeant, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order.

**STANDARD:** To provide all required support for a project or operation per the concept of operations and the commander's intent.

**PERFORMANCE STEPS:**

1. Review the operations order.
2. Identify tasks/missions beyond organic capabilities.
3. Determine sources of support.
4. Coordinate with supporting elements to provide required support.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. FMFM 3-1 Command and Staff Action
  3. MCWP 4-1 Logistics Operations
  4. MCWP 5-1 Marine Corps Planning Process
- 

**1371-ADMN-2049:** Establish operations center

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Company Gunnery Sergeant, Operations Chief

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a mission, personnel, a tent or other type of elemental shelter, communications equipment, and a site for the operations center.

**STANDARD:** To enhance efficiency in intra-staff coordination, minimize internal traffic, maximize communications, and maintain security.

**PERFORMANCE STEPS:**

1. Review the mission and commander's intent.
2. Determine personnel requirements.
3. Establish communication plan within the operations center.
4. Coordinate for physical security.
5. Assess cover and concealment requirements.
6. Establish security plan.
7. Ensure site isolation from major enemy avenues of approach.
8. Ensure set up of elemental shelter.

**REFERENCES:**

1. FMFM 13 MAGTF Engineer Operations
  2. FMFM 3-1 Command and Staff Action
- 

**1371-DEMO-2051:** Compute the Net Explosive Weight (NEW)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an explosive charge, a charge logbook, a calculator and references.

**STANDARD:** To determine safe blast and fragmentation distances for an explosive charge.

**PERFORMANCE STEPS:**

1. Utilizing conversion factors, convert weights of all explosives used into Tri-Nitro-Toluene (TNT) equivalent.
2. Determine the NEW in pounds.

**REFERENCES:**

1. SWO 60-AA-MMA-010 Demolition Materials
  2. TM 9-1300-206 Explosive Standards
  3. TM 9-1300-214 Military Explosives
- 

**1371-DEMO-2052:** Explain the principles and theory of explosive detonation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the requirement.

**STANDARD:** To provide information on the effects of employing an explosive charge.

**PERFORMANCE STEPS:**

1. Explain the effects of an explosive blast.
2. Explain the types of blast pressure.
3. Explain the types of blast injuries.
4. Explain protective measures taken for a given blast.
5. Calculate the safe-blast and safe-fragmentation distance from a given blast.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. SWO 60-AA-MMA-010 Demolition Materials
  3. TM 9-1300-206 Explosive Standards
  4. TM 9-1300-214 Military Explosives
-

**1371-DEMO-2053:** Explain the theory and operation of a shaped charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the requirement.

**STANDARD:** To provide information on the effects of employing a shaped charge.

**PERFORMANCE STEPS:**

1. Explain how the explosively formed penetrator of a shaped charge works.
2. Explain how different casing and liner materials effect shaped charge penetration.
3. Brief the effects of detonating blast pressures on the target structure.
4. Explain the effect of tamping on the explosive detonation.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. SWO 60-AA-MMA-010 Demolition Materials
  3. TM 9-1300-206 Explosive Standards
  4. TM 9-1300-214 Military Explosives
- 

**1371-DEMO-2054:** Take appropriate protective measures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an explosive charge, a designated target, an assault breachers kit, and PPE.

**STANDARD:** To ensure personnel safety during detonation based on target type, location, and the explosive charge employed.

**PERFORMANCE STEPS:**

1. Evaluate the explosive charge.
2. Evaluate the target and surrounding areas.
3. Determine possible effects of detonation on the target and surrounding structures.
4. Determine possible effects on the assault team.
5. Identify safety precautions required during detonation.
6. Compute Net Explosive Weight (NEW).
7. Compute safe standoff distance.



8. Brief team members on explosive effects and safe locations.
9. Position yourself and your team in a safe location during detonation.

**REFERENCES:**

1. FM 5-250 Explosives and Demolitions
  2. SWO 60-AA-MMA-010 Demolition Materials
  3. TM 9-1300-206 Explosive Standards
  4. TM 9-1300-214 Military Explosives
- 

**1371-DEMO-2055:** Identify building construction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a designated region of the world, a targeted structure, and references.

**STANDARD:** To determine an appropriate breaching technique.

**PERFORMANCE STEPS:**

1. Identify building construction methods.
2. Identify physical structural requirements for multi-level construction.
3. Identify standard construction methods and materials by region of the world.

**REFERENCES:**

1. NSWC TR 79-224 Characteristics of Urban Terrain
  2. NSWC/DL TR-3714 Urban Building Characteristics
- 

**1371-DEMO-2056:** Employ a doughnut charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breachers' kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2057:** Employ a window charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2058:** Employ a water charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2059:** Employ an oval charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
-

**1371-DEMO-2060:** Employ a Uli knot slider charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2061:** Employ a detonating cord linear charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Squad Member

**GRADES:** PFC

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.

7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2062:** Employ a concrete charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-DEMO-2063:** Employ a fence charge

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Class V, an assault breacher's kit, non-explosive materials, a target to attack, and protective field equipment.

**STANDARD:** To execute a successful breach while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate material.
2. Select the appropriate explosives for the target.
3. Assemble the charge.
4. Prepare a priming system.
5. Compute the Net Explosive Weight (NEW).
6. Place the charge.
7. Position assault element.
8. Detonate the charge.
9. Follow up with mechanical breaching as required.

**REFERENCES:**

1. Appropriate Reference Materials
- 

**1371-MOBL-2064:** Perform weapons handling procedures with the shotgun

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a shotgun and dummy ammunition.

**STANDARD:** Without violating the four safety rules.

**PERFORMANCE STEPS:**

1. Clean the shotgun.
2. Demonstrate the weapons carries.
3. Demonstrate the weapons transports.
4. Fill the magazine tube.
5. Place the weapon in Condition 1.
6. Conduct a Condition 1 reload.
7. Place the weapon in Condition 3.
8. Place the weapon in Condition 4.
9. Conduct a dry reload.
10. Apply remedial action.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
  2. MCRP 3-10 A Rifle Marksmanship
- 

**1371-MOBL-2065:** Maintain the shotgun

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a shotgun, small arms maintenance equipment, approved cleaning solvents, and lubricants.

**STANDARD:** To keep the shotgun operational/serviceable.

**PERFORMANCE STEPS:**

1. Handle the weapon safely.
2. Place the shotgun in Condition 4.
3. Disassemble the shotgun.
4. Clean the shotgun.
5. Lubricate the shotgun.
6. Reassemble the shotgun.
7. Perform a function check.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
  2. MCRP 3-10 A Rifle Marksmanship
  3. Applicable operation and maintenance manual/guide
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**1371-MOBL-2066:** Engage stationary targets with the shotgun

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a shotgun, individual field equipment, targets, and ammunition, while employing combat marksmanship techniques.

**STANDARD:** To assess ammunition effects on paper targets from 15yds and 25yds.

**PERFORMANCE STEPS:**

1. Clear the shotgun.
2. Select the appropriate ammunition type.
3. Fill the magazine tube.
4. Place the weapon in Condition 1.
5. Effectively engage targets on command.
6. Place the weapon in Condition 4.
7. Assess ammunition effects from 15 yards.
8. Repeat steps 1 through 7 with "weak" side from 15 yards.
9. Repeat steps 1 through 7 from 25 yards using "strong" side.
10. Repeat steps 1 through 7 from 25 yards using "weak" side.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual

2. MCRP 3-10 A Rifle Marksmanship
3. Applicable operation and maintenance manual/guide

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**1371-MOBL-2067:** Perform select shot drills with the shotgun

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a shotgun, individual field equipment, targets and ammunition.

**STANDARD:** Without allowing the shotgun to cycle out of ammunition.

**PERFORMANCE STEPS:**

1. Clear the shotgun.
2. Assume the Ready Carry.
3. Fill the magazine tube with three rounds.
4. Place the weapon in Condition 1.
5. Engage paper targets while conducting magazine tube not fully filled procedures.
6. Place the weapon in Condition 4.
7. Fill the magazine tube completely.
8. Place the weapon in Condition 1.
9. Fill the magazine tube with one final round.
10. Engage paper targets while conducting magazine tube fully filled procedures.
11. Place the weapon in Condition 4.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
2. MCRP 3-10 A Rifle Marksmanship
3. Applicable operation and maintenance manual/guide

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**1371-MOBL-2068:** Qualify with the shotgun

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a shotgun, individual field equipment, targets, a scorecard, a verifier, and ammunition.



**STANDARD:** Scoring a minimum of 70% in total hits on a stationary target from 25 yards.

**PERFORMANCE STEPS:**

1. Clear the shotgun.
2. Fill the magazine tube with "00" buckshot rounds.
3. Place the weapon in Condition One.
4. Engage targets on command.
5. Place the weapon in Condition Four.
6. Assess targets.
7. Fill the magazine tube with 1 oz. slug rounds.
8. Place the weapon in Condition One.
9. Engage targets on command.
10. Place the weapon in Condition Four.
11. Assess targets.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
  2. MCRP 3-10 A Rifle Marksmanship
  3. Applicable operation and maintenance manual/guide
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**1371-MOBL-2069:** Conduct a shotgun breach

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a determined point of entry to breach, a shotgun, ammunition, individual field equipment, and a door in frame with lockset.

**STANDARD:** To defeat the target while limiting the amount of collateral damage.

**PERFORMANCE STEPS:**

1. Select the appropriate ammunition.
2. Fill the magazine tube with suitable ammunition.
3. Place the weapon in Condition One.
4. Select attack point(s) on the target.
5. Position the muzzle.
6. Fire the shotgun. Be prepared to double tap.
7. Follow up with mechanical breaching as required.
8. Reload and prepare for follow-on actions.
9. Perform immediate action as required.
10. Perform remedial action as required.

**REFERENCES:**

1. 590 MILS M590 Shotgun Owner's Manual
2. FM 3-06.11 Combined Arms Operations in Urban Terrain

3. MCRP 3-10 A Rifle Marksmanship
4. Appropriate Reference Materials

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**1371-MOBL-2070:** Plan engineer aspects of river crossing operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, completed engineer reconnaissance forms and references.

**STANDARD:** To ensure the crossing is supportable and consistent with the commander's intent, while accounting for all tactical control measures per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available; and time, space and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Plan/conduct reconnaissance to determine potential river crossing sites, staging areas, ingress/egress routes, regulating points, and river profile.
5. Determine support requirements, to include fire support and logistics.
6. Coordinate with supported unit commanders.
7. Complete an overlay with engineer related tactical control measures.
8. Prepare order/appropriate appendix to operations order.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
2. FM 5-170 Engineer Reconnaissance
3. FM 90-13-1 Combined Arms Breaching Operations
4. FMFM 13 MAGTF Engineer Operations
5. MCRP 3-17B Engineer Forms and Reports
6. MCWP 3-17.1 River-Crossing Operations
7. MCWP 5-1 Marine Corps Planning Process

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**1371-MOBL-2071:** Plan breaching of a complex obstacle

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Battalions Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, an operations order, a map, current obstacle intelligence, and references.

**STANDARD:** That will result in a sufficient number of cleared lanes for assured force mobility per the commander's intent and the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available and time, space and logistics (METT-TSL).
2. Identify possible bypasses.
3. Identify the type of breaching operation required and the number of lanes required to allow passage of the maneuver element.
4. Identify potential breach sites.
5. Identify Requests for Information (RFI) to the S-2/G-2.
6. Determine type of explosive/non-explosive breaching assets available.
7. Task organize engineer personnel and equipment within the assault breach force.
8. Determine proper sequencing of the breach force based on tactical situation.
9. Develop battle drills (individual/unit) to rehearse the breach of a complex obstacle.
10. Determine support requirements.
11. Plan, prioritize, and recommend fire support.
12. Prepare appendix for the operation order.

**REFERENCES:**

1. FM 34-130 Intelligence Preparation of the Battlefield
  2. FM 5-100 Engineers in Combat Operations
  3. FM 5-101 Mobility
  4. FM 5-170 Engineer Reconnaissance
  5. FM 90-13-1 Combined Arms Breaching Operations
  6. FMFM 13 MAGTF Engineer Operations
  7. FMFM 13-7 MAGTF Breaching Operations
  8. MCWP 3-1 Ground Combat Operations
- 

**1371-MOBL-2072:** Conduct a route sweep

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 3 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** As a member of a team, given a tactical situation, a route to be swept, route sweeping equipment, a map, and a route sweep order.

**STANDARD:** To locate, mark, and/or neutralize all explosive hazards/obstacles on the designated route.

**PERFORMANCE STEPS:**

1. Analyze METT-TSL.

2. Task organize personnel and equipment.
3. Issue the order.
4. Conduct rehearsals.
5. Ensure all mines/obstacles are detected, marked, and neutralized.
6. Submit required reports.

**REFERENCES:**

1. FM 5-170 Engineer Reconnaissance
  2. FM 5-250 Explosives and Demolitions
  3. MCRP 3-17A Engineer Field Data
  4. MCRP 3-17B Engineer Forms and Reports
  5. MCWP 3-17.3 MAGTF Breaching Operations
- 

**1371-CMOB-2073:** Prepare an obstacle plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, and references.

**STANDARD:** That recommends types of obstacles; obstacle placement; the resources required to construct the obstacles; and an obstacle overlay, all of which support the scheme of maneuver by fixing, turning, blocking or disrupting enemy movement per the commander's intent and the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available and time, space and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2.
4. Provide guidance for the location and intent of obstacles to the S-3.
5. Identify logistics requirements to the S-4.
6. Identify and prioritize fire support requirements.
7. Prepare an overlay and an obstacle plan appendix to the operations order.

**REFERENCES:**

1. FM 20-32 Mine/Countermining Operations
  2. FM 34-130 Intelligence Preparation of the Battlefield
  3. FM 5-102 Countermobility
  4. FM 90-7 Combined Arms Obstacle Integration
  5. FMFM 13 MAGTF Engineer Operations
  6. MCWP 3-1 Ground Combat Operations
  7. MCWP 5-1 Marine Corps Planning Process
-

**1371-SURV-2074:** Prepare a survivability plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Battalions Operations Chief, Platoon Sergeant

**GRADES:** GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a tactical situation, a map, an operations order, the supported unit's T/O and T/E, and references.

**STANDARD:** That details the scope of engineer effort required to provide a level of force protection commensurate with enemy threat capabilities and the commander's intent per the references.

**PERFORMANCE STEPS:**

1. Analyze the mission, enemy, terrain, troops and fire support available and time, space and logistics (METT-TSL).
2. Conduct Intelligence Preparation of the Battlefield (IPB).
3. Identify Requests for Information (RFI) to the S-2/G-2.
4. Identify location(s) of survivability positions.
5. Identify and prioritize survivability requirements.
6. Plan for protective obstacle integration.
7. Task organize engineer equipment and personnel.
8. Plan inspections of survivability positions for proper construction techniques.
9. Prepare survivability appendix to the operation order.

**REFERENCES:**

1. FM 5-103 Survivability
  2. MCRP 3-17A Engineer Field Data
  3. MCWP 3-1 Ground Combat Operations
  4. MCWP 3-17 Engineer Operations
- 

**1371-MOBL-2075:** Construct expedient drainage structures

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given design specifications, personnel, tools and equipment, and construction materials.

**STANDARD:** Ensuring that ditch side slopes and longitudinal ditch slope; culverts; headwalls/wingwalls; and ditch lining all conform to the design specifications.

**PERFORMANCE STEPS:**

1. Review the specifications.
2. Task organize personnel and equipment.
3. Cut drainage ditches.
4. Excavate, as required, for culverts.
5. Install culverts.
6. Construct headwalls/wingwalls as required.
7. Install check dams as required.
8. Line ditches as required.

**REFERENCES:**

1. FM 5-428 Concrete Masonry
  2. FM 5-430-00-1, Volume 1 Planning and Design of Roads, Airbases, and Heliports in the Theater of Operations
  3. FM 5-434 Earthmoving Operations
  4. MCRP 3-17A Engineer Field Data
- 

**1371-MOBL-2076:** Perform mechanical breaching

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**BILLETS:** Fire Team/Section Leader, Squad Leader, Squad Member

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a designated target, SL-3 components from an assault breacher's kit, and protective field equipment,

**STANDARD:** To secure the entry of an assault force following a partial explosive or ballistic breach; or to gain access to a structure, facility or automobile while reducing collateral damage and safeguarding occupants.

**PERFORMANCE STEPS:**

1. Conduct target analysis.
2. Select appropriate tool.
3. Employ the tool.

**REFERENCES:**

1. MCWP 3-35.3 Military Operations on Urbanized Terrain
  2. Appropriate Reference Materials
-

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CHAPTER 18

MOS 1390 INDIVIDUAL EVENTS

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CHAPTER 18

MOS 1390 INDIVIDUAL EVENTS

**18000. PURPOSE.** This chapter includes all individual training events for the Bulk Fuel Officer. An individual event is an event that a trained Bulk Fuel Officer would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**18001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1390).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**18002. INDIVIDUAL CORE CAPABILITIES 1390**

1. BULK FUEL OFFICER - 1390 - Career Progression Philosophy

Bulk Fuel Officers serve in the Engineer Support Battalion and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which an Officer moves through the Engineer community is as follows:

a. Warrant Officers and above selected to serve as Bulk Fuel Officers after graduation from The Petroleum Officer Course.



b. Students are trained at Marine Detachment Fort Lee, VA.

c. Bulk Fuel Officers will be assigned to the operating forces at the Marine Logistics Group.

2. Billet Description. Bulk Fuel Officers are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF BULK FUEL OFFICERS

The bulk fuel officers MOS consists of technical warrant officers who plan, coordinate, and supervise the receipt, storage, transfer, and distribution of bulk fuel. Frequently, coordination with other agencies, both inter service and internationally, are required. Duties range from developing bulk fuel site rear area security plans, to emplacement of a bulk fuel system, to writing the bulk fuel portion of operation orders. Environmental concerns are extremely crucial in any training scenario.

3. Core Skills. Core skills are those essential skills that enable the warrant officer to perform as a Bulk Fuel Officer. Completion of the core skills in the initial formal school, qualify a warrant officer for the MOS 1390. The following core skills are identified for MOS 1390:

- a. Manage Bulk Fuel Site Construction/Installation
- b. Plan Bulk Fuel System Emplacement
- c. Prepare Spill Contingency Plan
- d. Supervise Bulk Fuel Equipment Maintenance
- e. Direct Petroleum Quality Surveillance and Control Program
- f. Write the POL Appendix of the Operation Order
- g. Review Quality Deficiency Report (QDR) (SF 368)
- h. Prepare Fire Contingency Plans
- i. Maintain Tactical Fuel System (TFS) Elastomeric Shelf/Use Life Program
- j. Conduct a Forward Arming Refueling Point (FARP)
- k. Calculate Feet of Head to PSI
- l. Measure Speed of Fuel
- m. Determine the Reynold's Number
- n. Determine Head Loss Due to Friction
- o. Determine the Hydraulic Gradient
- p. Determine the Design Hydraulic Gradient
- q. Identify Abnormal Variants in Head Pressure
- r. Supervise Product Change
- s. Manage Daily Inventory/Accountability of Bulk Petroleum Products
- t. Administer First Aid for fuel Contact with Eyes
- u. Administer First Aid for Inhalation of Vapors
- v. Administer First Aid for Fuel on Skin
- w. Administer First Aid for Ingestion of Fuel

4. Billet Applicability. The basic duties and core skills for the 1390 MOS are the same throughout the operating forces.

5. Supporting Establishment Billets

#### **Marine Expeditionary Force**

- (1) Fuels Officer

**Wing/Group Headquarters**

(1) Fuels Officer

**Regiment/Group Headquarters**

(1) None

**Battalion/Squadron**

(1) Fuels Officer

**Intermediate Level**

(1) Executive Officer (Company)  
(2) Platoon Commander

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**18004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1390-XENG-1001:** Manage Bulk Fuel Site Construction/Installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel distribution plan with a system layout, necessary equipment, engineer personnel, and references.

**STANDARD:** To ensure the ability to receive, store, transfer and dispense fuel to meet mission requirements.

**PERFORMANCE STEPS:**

1. Coordinate tactical fuel site preparation requirements (site clearing, road improvements/construction, and earthen berm construction for fabric fuel tanks) with unit engineer.
2. Supervise deployment and installation of tactical fuel system in a prepared site.
3. Provide guidance and assistance to engineer personnel during tactical bulk fuel site preparation.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1002:** Plan Bulk Fuel System Emplacement

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, the location of the operation, written fuel requirements of the operation, a communications plan, and references.

**STANDARD:** To support the requirements of the operation in accordance with the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review the fuel requirements
3. Review applicable publications.

4. Review fire prevention plan.
5. Assist in preparing preliminary environmental assessment.
6. Conduct a terrain analysis.
7. Determine fuel system site location.
8. Develop a system emplacement plan.

**REFERENCES:**

1. FM 10-69 Petroleum Supply Point Equipment and Operations
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 3-1 Command and Staff Action
  4. FMFM 4-1 Combat Service Support Operations
  5. FMFM 6-1 Marine Division
  6. MCWP 4-11.6 Bulk Liquid Operations
  7. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  8. NAVFAC P-908 Oil Spill Control for Inland Waters and Harbors
  9. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1003:** Prepare a Spill Contingency Plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, local environmental regulations, unit/base SOP, and references.

**STANDARD:** To ensure appropriate first response action in accordance with the references.

**PERFORMANCE STEPS:**

1. Review local environmental and fire prevention regulations.
2. Review operations order.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
  2. NAVFAC P-908 Oil Spill Control for Inland Waters and Harbors
  3. TC 5-400 w/CH #1 Unit Leader's Handbook for Environmental Stewardship
- 

**1390-XENG-1004:** Supervise Bulk Fuel Equipment Maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an engineer maintenance activity, engineer maintenance management directives, and references.

**STANDARD:** To distribute all engineer maintenance management directives to the activity and follow maintenance management SOPs in accordance with the references.

**PERFORMANCE STEPS:**

1. Review Maintenance Management Standard Operating Procedures (MMSOP).
2. Identify discrepancies in maintenance operations and cycle.
3. Analyze maintenance management reports.
4. Manage corrective maintenance (CM) program.

**REFERENCES:**

1. MCO P4790.2 MIMMS Field Procedures Manual
  2. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
  6. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
- 

**1390-XENG-1005:** Direct Petroleum Quality Surveillance and Control Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided test equipment, trained personnel, access to a laboratory, and references.

**STANDARD:** To ensure petroleum products are maintained to specification in accordance with the references.

**PERFORMANCE STEPS:**

1. Prepare quality surveillance and control SOP.
2. Check for compliance with the SOP.
3. Inspect for adherence to quality control procedures.
4. Identify and list all discrepancies.
5. Issue corrective orders.

**PREREQUISITE EVENTS:**

1391-XENG-1017	1391-XENG-1019	1391-XENG-1021
1391-XENG-1022	1391-XENG-1029	1391-XENG-1025
1391-XENG-1026	1391-XENG-1027	1391-XENG-1028
1391-XENG-1023		

**REFERENCES:**

1. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products

2. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  3. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1006:** Write the POL Appendix of the Operation Order

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order and references.

**STANDARD:** To ensure POL requirements are met in accordance with the operations order and references.

**PERFORMANCE STEPS:**

1. Study the concept of employment in the operations plan of supported unit.
2. Determine fuel requirements.
3. Determine fuel equipment available.
4. Identify bulk fuel support requirements.
5. Determine fuel source.
6. Coordinate with subordinate commands to provide support.
7. Identify support required.
8. Review references.
9. Review SOP.

**REFERENCES:**

1. Appendix 1 to Annex D Operations Order
  2. FMFM 3-1 Command and Staff Action
  3. Joint Publication 4-03 Joint Bulk Petroleum Doctrine
  4. Joint Publication 5-021 JOPS
  5. MCWP 4-11.6 Bulk Liquid Operations
  6. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  7. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  8. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
  9. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1007:** Review Quality Deficiency Report (QDR) (SF 368)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a completed SF 368 and references.

**STANDARD:** To ensure all inaccuracies are identified and submitted for correction in accordance with the references.

**PERFORMANCE STEPS:**

1. Review appropriate section of the reference.
2. Review the QDR for accuracy.
3. Compile a list of discrepancies.
4. Submit the list of discrepancies for correction.

**REFERENCES:**

1. TM 4700-15/1H Ground Equipment Record Procedures
  2. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures
- 

**1390-XENG-1008:** Prepare Fire Contingency Plans

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided operation orders, a completed bulk fuel system layout, fire fighting equipment, and references.

**STANDARD:** To mitigate the risk of fire during fueling operations in accordance with the references.

**PERFORMANCE STEPS:**

1. Analyze a potential fire threat.
2. Identify the location of all fire fighting equipment.
3. Identify personnel to support fire fighting effort.
4. Schedule inspections of fire fighting equipment and facilities.
5. List external support available (crash crew).
6. Develop fire prevention plans.
7. Plan and schedule fire drills.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 07661C-14/1 Extinguisher, Fire, Dry Chemical and Aqueous Film Forming Foam, Self Contained, Model D-4
  3. TM 10668A-13&P Compressed Air Foam System-Mobile
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
-



**1390-XENG-1009:** Maintain Tactical Fuel System (TFS) Elastomeric Shelf/Use Life Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** DoD Directive 4140.27 (Shelf-Life Management Manual) addresses life cycle management of shelf-life items while awaiting issue from depots in the supply chain. The elastomeric fabric tanks and hoses of the TFS are a Type II shelf-life item in the DoD Directive 4140.27.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a TFS and references.

**STANDARD:** To ensure the elastomeric components are maintained in a serviceable condition.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine whether on hand TFS elastomeric components (fabric tanks/hoses) are in shelf-life or use-life status.
3. Conduct required inspections on TFS elastomeric components in a shelf-life status to ensure items meet storage and preservation requirements.
4. Conduct required inspections on TFS elastomeric components in a shelf-life status to ensure items are properly marked.
5. Develop TFS elastomeric shelf/use-life records.
6. Maintain TFS elastomeric shelf/use-life records.
7. Prepare required shelf-life reports.
8. Submit required shelf-life reports.
9. Determine the required test of a given batch of TFS elastomeric components in order to extend shelf-life.
10. Determine the required quantity of a given batch of TFS elastomeric components in order to extend shelf-life.
11. Determine required frequency of inspection of elastomeric shelf/use life components.
12. Properly dispose of expired elastomeric components.

**REFERENCES:**

1. ASTM D380 Standard Test Method for Rubber Hose
2. DLAR 140.55 Reporting of Item and Packaging Discrepancies
3. DOD 4140.27-M Shelf-Life Item Management Manual
4. MCO 4450.13 Joint Reg for Safeguarding Sensitive Inventory Items,
5. MCO 4450.14 Joint Service Manual for Storage and Materials Handling
6. MCO P4030.36 Marine Corps Packaging Manual
7. MIL-STD-105 Sampling Procedures and Tables for Inspection by Attributes
8. MIL-STD-109 Inspection Terms and Definitions
9. MIL-STD-129 Military Marking for Shipment and Storage
10. MIL-STD-2073-1C Standard Practice for Military Packing
11. MIL-STD-2073-2B Packaging Requirement Code
12. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

13. TM 4700-15/1H Ground Equipment Record Procedures
14. TM 4700-15/1H w/ch 3 Ground Equipment Record Procedures

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**1390-XENG-1010:** Conduct a Forward Arming Refueling Point (FARP)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 6 months

**DESCRIPTION:** The Helicopter Expedient Refueling System is designed for refueling attack helicopters in support of operations in remote locations. It is normally used at Forward Arming and Refueling Points (FARP). Versatility, ease of transportability, and rapid deployment are key features of the HERS. The HERS employs 500-gallon collapsible fuel drums, 3,000-gallon tanks, skid-mounted 125 GPM pumps, filter-separators, and monitors. The HERS can be rapidly installed and configured to meet the specific tactical situation and requirement.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order and references.

**STANDARD:** To ensure the requirements are met in accordance with the operations order and references.

**PERFORMANCE STEPS:**

1. Review the operations order.
2. Review local SOPs.
3. Verify fuel requirements with supported units.
4. Conduct terrain/map analysis.
5. Coordinate with external teams (i.e.- Airboss, MMT, ARFF, EOD, EAF, ordinance, weather).
6. Solidify Table of Equipment.
7. Solidify Table of Organization.
8. Assign key billets.
9. Conduct FARP team rehearsals.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
2. TM 04486B-15 Drum, Collapsible Liquid Fuel 500 GAL
3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
4. TM 5-4320-309-14 125 GPM Pump
5. TM 5-4330-217-12 Operator and Organizational Maintenance Manual, Filter Separator, Liquid 100 GPM, Frame Mounted
6. TM 5-6630-218-10 Aviation Fuel, Contaminant, Test Kit

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**1390-XENG-1011:** Calculate Feet of Head to PSI

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** For a particular fuel at a given pump discharge pressure, there is a maximum height (elevation in feet) to which fuel can be pumped. This is known as Feet of Head (Hf).

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given necessary mathematical equations, known specific gravity, and references.

**STANDARD:** To measure friction loss pressure over distances.

**PERFORMANCE STEPS:**

1. Convert Feet of Head to PSI.
2. Convert PSI to Feet of Head.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1012:** Measure Speed of Fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Hose line deployment may be required between geographically separated TFS sites. An understanding of the basic dynamics of pump discharge pressure and volume flow rate in relation to friction loss, static head, distance, elevation and fuel gravity (Specific Gravity) is essential in the proper planning for hose line employment and operation.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided necessary formulas and references.

**STANDARD:** To obtain fuel velocity in feet per second or flow rate in gallons per minute.

**PERFORMANCE STEPS:**

1. Determine the required formulas.
2. Determine the inside diameter of pipe in feet.
3. Convert variables.
4. Calculate formulas using converted variables.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
-

**1390-XENG-1013:** Determine the Reynold's Number

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Reynold's Number is a dimensionless value equal to velocity in feet per second- times diameter in feet- times kinematic viscosity in square feet per second.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the flow rate in gallons per minute, inside diameter of pipes in inches, viscosity in centistokes, and references.

**STANDARD:** To identify the flow type.

**PERFORMANCE STEPS:**

1. Convert variables.
2. Perform calculations per the reference.
3. Determine flow type.
4. Determine friction factor.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1014:** Determine Head Loss Due to Friction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Feet of Head data by itself is not sufficient in determining the distance (vertical) that fuel can be pumped by a single pump. Head Loss (sometimes referred to as friction loss) is another major factor in pumping operations that must be determined.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the necessary formula, friction factor, hose length in feet, flow rate, inside diameter of hose, and references.

**STANDARD:** To measure the resistance factor.

**PERFORMANCE STEPS:**

1. Convert variables.
2. Perform calculations per the reference.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1390-XENG-1015:** Determine the Hydraulic Gradient

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Hydraulic Gradient (HG) is the Head Loss (HL) in a hose line over one mile of horizontal distance. Note that any distance may apply. The HG provides an expedient method of estimating the placement of booster pump stations in a hose line trace.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given gallons per minute, inside diameter of the fuel line, design of fuel, and references.

**STANDARD:** To place booster pumps in the correct locations.

**PERFORMANCE STEPS:**

1. Determine hydraulic gradient base on Mogas at 60 degrees Fahrenheit.
2. Convert to designed fuel.
3. Plot hydraulic gradient on pipeline trace.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1390-XENG-1016:** Determine the Design Hydraulic Gradient

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given the total available head and references.

**STANDARD:** To place booster pumps in the proper locations.

**PERFORMANCE STEPS:**

1. Determine initial suction in Feet of Head.
2. Determine minimum suction in Feet of Head.
3. Determine pump capability in Feet of Head.

4. Plot Total Available Head.
5. Subtract minimum Suction Head.
6. Plot Hydraulic Gradient to determine second booster station.
7. Plot Hydraulic Gradient to as required to determine remaining booster station positions.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1017:** Identify Abnormal Variants in Head Pressure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given minimum Available Head for existing flow conditions.

**STANDARD:** To alleviate Head Loss.

**PERFORMANCE STEPS:**

1. Determine the Hydraulic Gradient.
2. Determine the distance in feet.
3. Identify Design Fuel.
4. Determine pipe size.
5. Determine dynamic pressure.
6. Calculation variations in head pressure.
7. Determine static pressure.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1018:** Supervise Product Change

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel system that requires a change of product, a new fuel source, and references.

**STANDARD:** To ensure the fuel system is prepared to receive the new product in accordance with the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Determine required change.
3. Execute to meet specification requirements.

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. FM 10-67-2 Petroleum Laboratory Testing and Operations
  3. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  4. TM 9130-12 Fuel Handling Procedures (Liquid Fuel)
- 

**1390-XENG-1019:** Manage Daily Inventory/Accountability of Bulk Petroleum Products

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel system with product, local SOPs, access to established fuel pumping site, operations orders, and references.

**STANDARD:** To ensure product tolerance meets loss/gain requirements in accordance with the local SOP and references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Sign for initial receipt of fuel.
3. Establish opening inventory.
4. Measure fuel by metering or estimates
5. Tally receipts.
6. Subtract issues.
7. Subtract losses.
8. Write physical inventory.
9. Write book inventory.
10. Perform volume corrections per API Tables 5B/6B, and reference #4 when applicable.

**REFERENCES:**

1. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
2. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
3. MCO 4400.170 Control and Accounting for Petroleum and Related Products
4. MCWP 4-11.6 Bulk Liquid Operations

5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1390-XENG-1020:** Administer First Aid for Fuel Contact with Eyes

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for skin exposed to fuel.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Repeatedly flush thoroughly with large amounts of fresh water.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1042                      1391-XENG-1041                      1391-XENG-1043

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1390-XENG-1021:** Administer First Aid for Inhalation of Vapors

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL



**CONDITION:** Provided a situation requiring first aid for inhalation of vapors.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Remove victim from vapors to fresh air area.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1042                      1391-XENG-1040                      1391-XENG-1043

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-1022:** Administer First Aid for Fuel on Skin

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for fuel ingestion/contact with eyes and skin.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Wet clothes first, or if not possible, ground yourself.
2. Repeatedly, rinse thoroughly with fresh water.
3. Wash skin with soapy water.
4. Seek medical assistance if necessary.
5. Replace clothing with clean items.

**RELATED EVENTS:**

1391-XENG-1043                      1391-XENG-1041                      1391-XENG-1040

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
-

**1390-XENG-1023:** Administer First Aid for Ingestion of Fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for ingestion of fuel.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Keep victim calm.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1041

1391-XENG-1040

1391-XENG-1042

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**18005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1390-XENG-2001:** Supervise Bulk Fuel Operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a scenario, operations order, an fuel distribution plan, and references.

**STANDARD:** To ensure daily fuel requirements are met in accordance with the operations order and references.

**PERFORMANCE STEPS:**

1. Conduct safety inspections.
2. Supervise fuel system communications plan.
3. Monitor fuel distribution plan.
4. Issue pumping orders.
5. Monitor fuel operations.
6. Requisition fuel as needed through higher headquarters.

**REFERENCES:**

1. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
  2. DOD 4140.27-M Shelf-Life Item Management Manual
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. FMFM 13 MAGTF Engineer Operations
  5. FMFM 3-1 Command and Staff Action
  6. FMFM 4-1 Combat Service Support Operations
  7. FMFM 4-4 Engineer Operations
  8. FMFM 6-1 Marine Division
  9. MCWP 4-11.6 Bulk Liquid Operations
  10. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-2002:** Register Bulk Fuel Prepositioned War Reserve Materiel Requirements (PWRMR) with Appropriate Combatant Commander (COCOM)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer

**GRADES:** CWO-3

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an operations plan with time phased force deployment data and references.

**STANDARD:** To ensure mission requirements are met in accordance with the references.

**PERFORMANCE STEPS:**

1. Determine fuel requirements from the operations plan and the Time Phase Force Deployment Data (TPFDD).
2. Submit requirements to the appropriate COMCOM JPO.

**REFERENCES:**

1. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
  2. Joint Publication 4-03 Joint Bulk Petroleum Doctrine
  3. MCWP 4-11.6 Bulk Liquid Operations
- 

**1390-XENG-2003:** Supervise Embarkation of Tactical Fuel Equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided tactical fuel equipment, application tools, embarkation order, and references.

**STANDARD:** To ensure the tactical fuel system is prepared for embarkation in accordance with the references.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review embarkation order.
3. Maintain equipment embarkation readiness per the references.
4. Maintain equipment inventory levels per the references.

**REFERENCES:**

1. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  3. TM 4700-15/1H Ground Equipment Record Procedures
- 

**1390-XENG-2004:** Calculate Day of Supply by Type of Fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided operation orders, using units' T/E, using unit estimates, and references.

**STANDARD:** To ensure sufficient product is available to meet using units' fuel requirements.

**PERFORMANCE STEPS:**

1. Review the references.
2. List amount of equipment to be support from the T/E.
3. List kind of equipment to be support from the T/E.
4. State if day of supply is based on estimates or use.
5. List equipment storage capability.

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1390-XENG-2005:** Determine Source of Supply

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an operations plan, daily consumption requirements, local SOPs, and references.

**STANDARD:** To ensure sustainment requirements are met in accordance with the references.

**PERFORMANCE STEPS:**

1. Determine source of supply.
2. List source of supply.
3. Document where the source of supply is military or commercial.
4. Determine route/method by which fuel is to be received.
5. Determine how the supply will be packaged.
6. Determine proper procedures for requesting the supply.
7. Determine chain of command for requesting the supply.

**REFERENCES:**

1. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
  2. MCO 4400.170 Control and Accounting for Petroleum and Related Products
  3. MCWP 4-11.6 Bulk Liquid Operations
- 

**1390-XENG-2006:** Direct MOS Training Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided unit Table of Organization, unit Table Equipment, and references.

**STANDARD:** To ensure Marines are properly trained to standard in accordance with the Training and Readiness Manual.

**PERFORMANCE STEPS:**

1. Review MCO 1500.40.
2. Review Table of Organization.
3. Review Table of Equipment.
4. Review Training and Readiness Manual.
5. Review MCO P4790.2.
6. Review personnel training records.
7. Develop training program policies and procedures.

**REFERENCES:**

1. MCO 3501.1C Marine Corps Combat Readiness and Evaluation System
  2. MCO P4790.2C MIMMS Field Manual
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  5. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  8. TM 9130-12 Fuel Handling Procedures (Liquid Fuel)
  9. UNIT SOP Unit's Standing Operating Procedures
- 

**1390-XENG-2007:** Maintain Records and Forms

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Platoon Commander

**GRADES:** WO-1, CWO-2

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided engineer equipment, appropriate records and forms, and references.

**STANDARD:** To ensure equipment status is properly documented.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review mission requirements.

3. Identify required equipment.
4. Establish records, forms, and procedures.

**REFERENCES :**

1. MCO 5210.11E Records Management Program for the Marine Corps
  2. MCO 5213.7 Marine Corps Forms Management Program
  3. MCO P4790.2 MIMMS Field Procedures Manual
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
  6. UNIT SOP Unit's Standing Operating Procedures
-

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CHAPTER 19

MOS 1391 INDIVIDUAL EVENTS

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CHAPTER 19

MOS 1391 INDIVIDUAL EVENTS

**19000. PURPOSE.** This chapter includes all individual training events for the Bulk Fuel Specialist. An individual event is an event that a trained Bulk Fuel Specialist would accomplish in the execution of Mission Essential Tasks (METs). These events are linked to a Service-Level Mission Essential Task. This linkage tailors individual and collective training for the selected MET. Each event is composed of an individual event title, condition, standard, performance steps, support requirements, and references. Accomplishment and proficiency level required is determined by the event standard.

**19001. ADMINISTRATIVE NOTES**

1. Individual T&R events are coded for ease of reference. Each event has a 4-4-4-character identifier. The first four characters represent the MOS (1391).

2. The second four characters represent the functional or duty area. For example:

XENG - General Engineering  
SURV - Survivability  
RECN - Engineer Reconnaissance  
MOBL - Mobility  
CMOB - Counter-mobility  
DEMO - Demolitions

See Appendix A for a complete list of functional areas.

3. The first of the last four characters represent the level (1000 or 2000) and the last three characters the sequence (1001, 2101) of the event. The Engineer and Utilities individual training events are separated into two levels:

1000 - Core Skills  
2000 - Core Plus Skills

**19002. INDIVIDUAL CORE CAPABILITIES 1391**

1. BULK FUEL SPECIALIST - 1391 - Career Progression Philosophy

Bulk Fuel Specialists serve in the Engineer Support Battalion and the Marine Wing Support Squadron. The tour length for all ranks is 24 months. The order in which an Operator moves through the Engineer community is as follows:

a. Lance Corporals and above selected to serve as Bulk Fuel Specialists after graduation from The Basic Petroleum Course.

b. Students are trained at Marine Detachment Fort Lee, VA.

c. Bulk Fuel Specialists will be assigned to the operating forces at the Marine Logistics Group.

2. Billet Description. Bulk Fuel Specialists are trained, equipped, and assigned to specific units in the operating forces.

#### MISSION OF BULK FUEL SPECIALISTS

Bulk fuel specialists install, operate, maintain and repair fuel handling units and accessory equipment, and test petroleum products to evaluate the quality used in amphibious assault fuel handling systems.

3. Core Skills. Core skills are those essential skills that enable the Marine to perform as a Bulk Fuel Marine. Completion of the core skills in the initial formal school, qualify a Marine for the MOS 1391. The following core skills are identified for MOS 1391:

- a. Draw Schematic of Bulk Fuel Operations
- b. Set-up SixCon Pump and Tank Modules
- c. Install Pump Assembly Expedient Refueling System (ERS)
- d. Assemble a Helicopter Expedient Refueling System (HERS)
- e. Assemble a Tactical Airfield Fuel Dispensing System (TAFDS)
- f. Assemble Amphibious Assault Refueling System (AAFS)
- g. Deploy a Hose Reel System (HRS) in support of Tactical Fuel Systems (TFS)
- h. Operate a 125 GPM Pump Assembly
- i. Operate 350 GPM Pump Assembly
- j. Operate a 600 GPM Pump Assembly
- k. Set-up a Tactical Fuel System for Recirculation
- l. Place Firefighting Equipment
- m. Perform Aircraft Refueling Point Operations
- n. Execute an Oil Spill Contingency Plan
- o. Operate a Twin Agent Unit (TAU)
- p. Operate Compressed Air Foam System- Mobile (CAFS-M)
- q. Obtain an All-Level Fuel Sample
- r. Conduct Sampling Procedures from a Closed Fuel System
- s. Conduct Visual Fuel Tests
- t. Complete Petroleum Sample Tag (DA Form 1804)
- u. Check Water Level with Water Finding Paste
- v. Conduct a Gravity (API) Test
- w. Convert API Gravity to Specific Gravity
- x. Convert Specific Gravity to API Gravity
- y. Conduct a B-2 Anti-Icing Additive Test
- z. Test Aviation Fuel Utilizing the Aviation Fuel Test Kit
- aa. Establish a Calibration Curve
- bb. Conduct a Contaminated Fuel Detector (CFD) Test
- cc. Conduct Free Water Detector Test (FWD) using the CCFD
- dd. Conduct Scheduled Pump Preventive Maintenance
- ee. Conduct 500 Gallon Collapsible Drum Preventive Maintenance
- ff. Conduct Filter Separator Preventive Maintenance/Filter Replacement

- gg. Conduct Fuel Monitor (Go/No-Go) Preventive Maintenance/Fuse Replacement
- hh. Conduct Collapsible Tank Preventive Maintenance
- ii. Conduct Twin Agent Unit (TAU) Preventive Maintenance
- jj. Conduct Compressed Air Foam System- Mobile (CAFS-M) Preventive Maintenance
- kk. Conduct Hose Reel System (HRS) Preventive Maintenance
- ll. Conduct Preventive Maintenance on Six-Con Pump and Tank Modules
- mm. Perform Collapsible Tank Repair
- nn. Administer First Aid for Fuel Contact with Eyes
- oo. Administer First Aid for Inhalation of Vapors
- pp. Administer First Aid for Fuel on Skin
- qq. Administer First Aid for Ingestion of Fuel

4. Billet Applicability. The basic duties and core skills for the 1391 MOS are the same throughout the operating forces.

5. Supporting Establishment Billets

**Wing/Group Headquarters**

- (1) Fuels Chief

**Regiment/Group Headquarters**

- (1) None

**Battalion/Squadron**

- (1) Fuels Chief

**Intermediate Level**

- (1) Platoon Sergeant
- (2) Unit Leader
- (3) Section Leader
- (4) Engineer Equipment Operator
- (5) Tank Operator/Line Walker
- (6) Shuttlecraft Handler
- (7) Pump Operator
- (8) Dispensing NCO
- (9) Dispensing Operator
- (11) Quality Control NCO
- (12) Quality Control Man

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**19004. 1000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1391-XENG-1001:** Draw schematic of bulk fuel operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, location of operation, tactical fuel system layout, and references.

**STANDARD:** To ensure the tactical fuel system meets operational requirements.

**PERFORMANCE STEPS:**

1. Review references.
2. Review bulk fuel system layout.
3. Review operations order.
4. Study location.

**REFERENCES:**

1. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1391-XENG-1002:** Set-up SixCon Pump and tank modules

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** This liquid storage, transporting, and dispensing system is commonly called the SIXCON (six containers) because when configured for administrative shipping (empty, no fuel) on cargo ships, six of the modules can be assembled together with special connectors to form a standard 8x 8 x 20 International Organization for Standardization (ISO) container. The SIXCON system is used to store, transport, and dispense fuel from either a static site or deployed on tactical medium and heavy lift trucks.

**BILLETS:** Bulk Fuel Specialist, Dispensing Operator, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a Six-Con Pump and Tank Module, required components, and references.

**STANDARD:** to dispense fuel to using units in order to meet mission requirements.

**PERFORMANCE STEPS:**

1. Connect pump module to tank modules using the various components.

2. Connect fuel suction hose to suction manifold and fuel tank.
3. Open suction hose coupling valve.
4. Start pump.
5. Dispense fuel.
6. Idle pump.
7. Close valves.
8. Shut-down pump.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 09003A/ 09002A-15&P/1w/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components (List Sixcon)
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1391-XENG-1003:** Install pump assembly Expedient Refueling System (ERS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The simplest of the TFS systems is the Expedient Refueling System (ERS). The ERS is a portable, compact, and self-contained 125 GPM pump unit with components capable of establishing two refueling points. It is used for the expedient refueling of ground equipment and is used in conjunction with TFS storage containers, such as the 500-gallon collapsible fuel drum or 3,000-gallon collapsible fabric fuel tank.

**BILLETS:** Bulk Fuel Specialist, Dispensing Operator, Pump Operator, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a pump assembly, Expedient Refueling System, fuel source, required tools, and references.

**STANDARD:** to dispense fuel to using units in order to meet mission requirements.

**PERFORMANCE STEPS:**

1. Remove dust cover.
2. Inspect for leaks.
3. Check hose and components for presence of gaskets.
4. Connect elbow valve to fuel drum.
5. Connect suction hose to elbow drive.
6. Connect suction hose to pump.
7. Ground pump.
8. Connect discharge hose to pump.
9. Install gravity flow nozzle.
10. Install nozzle stand.
11. Install grounding rod/cable for vehicles.
12. Set-up inventory control procedures.

**RELATED EVENTS:**

1391-XENG-1004

**REFERENCES:**

1. MCWP 4-25.5 Bulk Liquids Operations
  2. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  3. SL-3-03707F w/ch 1 Pump Assembly, Expedient Refueler
  4. SL-4-06995A Meter Assembly, Skid Mounted 2"
  5. SL-4-08922C Pump Unit 125 GPM
  6. SL-4 06995A Meter Assembly, Skid Mounted ( 2" )
  7. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  8. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  9. TM 5-4320-309-14 125 GPM Pump
- 

**1391-XENG-1004:** Assemble a Helicopter Expedient Refueling System (HERS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Helicopter Expedient Refueling System (HERS) is designed for refueling attack helicopters in support of operations in remote locations. It is normally used at Forward Arming and Refueling Points (FARP). Versatility, ease of transportability, and rapid deployment are key features of the HERS. The HERS employs 500-gallon collapsible fuel drums, 3,000-gallon tanks, skid-mounted 125 GPM pumps, filter-separators, and monitors. The HERS can be rapidly installed and configured to meet the specific tactical situation and requirement.

**BILLETS:** Dispensing Operator, Pump Operator, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a SL-3 complete HERS and references.

**STANDARD:** To dispense fuel to using units in order to meet mission requirements.

**PERFORMANCE STEPS:**

1. Connect suction hose from fuel source to suction side of pump.
2. Connect discharge hose from pump to inlet side of filter separator.
3. Connect discharge hose from discharge side of filter separator to inlet side of fuel monitor.
4. Connect discharge hose from monitor to inlet side of 2-inch meter.
5. Connect discharge hose from outlet side of 2-inch meter to nozzle.
6. Mount nozzle on nozzle stand.
7. Ground all equipment.
8. Install aircraft grounding cable at nozzle stand area.

**RELATED EVENTS:**

1391-XENG-1003



**REFERENCES:**

1. MCWP 4-25.5 Bulk Liquids Operations
  2. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  3. SL-3-07387C Helicopter Expedient Refueling System
  4. SL-3-08922C Repair Parts list, Pump Unit 125 GPM
  5. SL-3-09467A Pump Assembly, Centrifugal
  6. SL-3-10803A Fuel Tank Assembly, Fabric, Collapsible 3 K
  7. SL-4-06995A Meter Assembly, Skid Mounted 2"
  8. SL-4-08922C Pump Unit 125 GPM
  9. SL-4 06995A Meter Assembly, Skid Mounted ( 2" )
  10. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  11. TM 5-4320-309-14 125 GPM Pump
  12. TM 5-6630-218-10 Aviation Fuel, Contaminant, Test Kit
  13. TM-04486B-15 Drum, Fabric, Collapsible Liquid Fuel 500 Gal
  14. TM-08922A-24P/2 Pump unit, Centrifugal, Self-priming, 125 GPM
- 

**1391-XENG-1005:** Assemble a Tactical Airfield Fuel Dispensing System (TAFDS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Tactical Airfield Fuel Dispensing System (TAFDS) is used to provide bulk fuel receipt, storage, and aircraft refueling capabilities at expeditionary airfields and FOB. This system is air-transportable, versatile, and can be quickly installed without special tools. Compatible with other Marine Corps TFS, the TAFDS can receive fuel from almost any source.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Pump Operator

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a SL-3 complete TAFDS, site location, and references.

**STANDARD:** To dispense fuel utilizing the proper assemblies capable of receiving, storing, and dispensing to aircraft.

**PERFORMANCE STEPS:**

1. Survey proposed area and prepare the site.
2. Construct fuel storage site with required components (mission dependent).
3. Construct fuel dispensing assembly (mission dependent).
4. Construct fuel receiving assembly (mission dependent).
5. Ensure environmental control devices are properly placed.
6. Ensure repair devices are properly placed.
7. Ensure interface devices are properly placed.
8. Ensure firefighting equipment is properly placed.
9. Ensure quality control measures are in compliance.

**CHAINED EVENTS:**

1391-XENG-1005	1391-XENG-1007	1391-XENG-1028
1391-XENG-1015	1391-XENG-1026	1391-XENG-1010

**RELATED EVENTS:**

1391-XENG-1006

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. FM 10-68 Aircraft Refueling
3. FM 10-69 Petroleum Supply Point Equipment and Operations
4. LI 86702D-12 Pump Centrifugal, Skid Mounted (600)
5. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
6. MCO P4790.2C MIMMS Field Manual
7. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
8. MCWP 4-25.5 Bulk Liquids Operations
9. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
10. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
11. SL-3 04491B Fuel Monitor Assembly (350 GPM)
12. SL-3 04717B Meter Assembly, Skid Mounted (3")
13. SL-3 06996C Repair Kit, General, Bulk Fuel System
14. SL-3 06996C w/ch 1-2 Tank Assembly, Fabric, Collapsible (20K)
15. SL-3 07391B Fuel System, Tactical Airfield
16. SL-3-09467A Pump Assembly, Centrifugal
17. SL-4 05743B Manifold Dispensing
18. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1006:** Assemble Amphibious Assault Refueling System (AAFS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The AAFS is the largest of the TFS systems. The AAFS is used to receive, store, transfer, and dispense fuel to all elements of a MAGTF including distribution to Forwarding Operating Bases (FOB). The AAFS can receive fuel from offshore vessels, railcars, tank trucks, bulk storage tanks, pipeline/hose line, and drums. Fuel is transferred by AAFS hoseline or tactical/host nation fuel distribution capabilities (tanker trucks, barges, etc.) to another storage site or dispensed to individual containers, vehicles, tank trucks, and other fuel systems.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Embarkation NCO, Pump Operator, Section Leader, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** SSGT, GYSGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a SL-3 complete AAFS, site location, and references.

**STANDARD:** To dispense fuel utilizing the proper assemblies capable of receiving, storing, transferring, and dispensing in direct support of the Marine Air Ground Task Force.

**PERFORMANCE STEPS:**

1. Survey proposed area and prepare the site.

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2. Construct fuel storage site with required components. (mission dependent)
3. Construct beach unloading assembly. (mission dependent)
4. Construct booster assembly. (mission dependent)
5. Construct fuel receiving assembly. (mission dependent)
6. Construct Hose Reel System. (mission dependent)
7. Construct tank farm assemblies.
8. Prepare the adapting assembly.
9. Ensure environmental control, repair, and interface devices are properly placed.
10. Ensure firefighting equipment is properly placed.
11. Ensure quality control measures are in compliance.

**CHAINED EVENTS:**

1391-XENG-1005	1391-XENG-1014	1391-XENG-1010
1391-XENG-1012	1391-XENG-1015	1391-XENG-1016
1391-XENG-1019	1391-XENG-1022	1391-XENG-1025
1391-XENG-1026	1391-XENG-1028	1391-XENG-1029
1391-XENG-1035	1391-XENG-1036	1391-XENG-1037
1391-XENG-1001	1391-XENG-1007	

**REFERENCES:**

1. FM 10-68 Aircraft Refueling
2. FM 10-69 Petroleum Supply Point Equipment and Operations
3. LI 86702D-12 Pump Centrifugal, Skid Mounted ( 600 )
4. MCO 4450.12 Storage and Handling of Hazardous Materials
5. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
6. MCO 4855.10 Product Quality Deficiency Report (PQDR)
7. MCO P4790.2c w/ch1 MIMMS Field Procedures Manual
8. MCWP 3-31.5 Ship-to-Shore Movement
9. MCWP 4-25.5 Bulk Liquids Operations
10. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
11. SL-3 04491B Fuel Monitor Assembly ( 350 GPM )
12. SL-3 04717B Meter Assembly, Skid Mounted ( 3" )
13. SL-3 06996C Repair Kit, General, Bulk Fuel System
14. SL-3 06996C w/ch 1-2 Tank Assembly, Fabric, Collapsible ( 20K )
15. SL-3 07661A Extinguisher Fire, Dry Chemical ( AFFF )
16. SL-3 10761A Tank, Fabric, Collapsible w/chest, Fuel ( 50K )
17. SL-3 86702D w/ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
18. SL-3 86702F w/ch 1 Pump, Centrifugal, Trailer Mounted ( 600 GPM )
19. TM 10-4320-344-24 600 GPM Pump
20. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
21. TM 5-4320-303-10 600 GPM Pump

**1391-XENG-1007:** Deploy a Hose Reel System (HRS) in support of Tactical Fuel Systems (TFS)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The purpose of the HRS is to provide powered or manual deployment and powered retrieval of lightweight 6-inch hose. The hose is used to connect assemblies within the AAFS and distribute fuel to the FOB and other

tactical fuel systems. Each AAFS has an HRS coupled with the two booster pump assemblies to provide the hose line transfer capabilities.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Embarkation NCO, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Hose Reel System, supporting vehicles, required tools, designated route, and references.

**STANDARD:** To assist in dispensing fuel in direct support of the Marine Air Ground Task Force.

**PERFORMANCE STEPS:**

1. Conduct pre-operational checks.
2. Mount the base units/power units on vehicles.
3. Deploy hose with adapters at pre-determined position.
4. Connect hose to fuel source at required assembly.
5. Stage the empty spools at pre-determined locations for re-deployment.
6. Check equipment for retrieval of hose and perform maintenance as required.
7. Retrieve hose per the reference.

**CHAINED EVENTS:**

1391-XENG-1037                      1391-XENG-1006

**REFERENCES:**

1. MCWP 4-11.6 Bulk Liquid Operations
2. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
3. TM 10596A-13&P Marine Corps Hose Reel System
4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** Motor Transportation Specialist

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**1391-XENG-1008:** Operate a 125 GPM pump assembly

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 125 GPM pump assembly is used in the HERS, ERS, and SIXCON fuel pump modules. The frame-mounted unit consists of a diesel engine, frame assembly, and pump. There are different models of 125 GPM pumps.

**BILLETS:** Bulk Fuel Specialist, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a 125 GPM Pump Assembly, and references.

**STANDARD:** To dispense fuel from a tactical fuel system.

**PERFORMANCE STEPS:**

1. Perform pre-start checks.
2. Ensure pump is properly grounded.
3. Move throttle lever to high RPM position.
4. Engage compression release lever.
5. Prime pump as required.
6. Use hand crank or pull cord to start pump.
7. Once engine starts, remove crank handle and secure in storage position or release cord.
8. Prior to shutdown, operate engine at idle speed for 3 to 5 minutes to allow engine cooling.
9. Stop engine by rotating throttle control lever to fully closed position.
10. Perform post-operational checks.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. SL-4-08922C Pump Unit 125 GPM
  3. TM 08922A-24P/2 Pump Unit, Centrifugal, Self-Priming, 125 GPM
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1391-XENG-1009:** Operate 350 GPM pump assembly

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 350 GPM pump is capable of pumping all types and grades of automotive and aviation fuel. This size pump is used only by the TAFDS and is mounted on a two-wheel frame assembly for towing purposes.

**BILLETS:** Bulk Fuel Specialist, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a 350 GPM Pump Assembly and references.

**STANDARD:** To dispense fuel in support of a tactical fuel system.

**PERFORMANCE STEPS:**

1. Perform pre-start checks.
2. Ensure pump is grounded, volute full, and pump level and secure.
3. Push and raise throttle control, releasing it to the idle position.
4. Pull-out emergency stop switch.
5. Push-in oil pressure by-pass button and start switch simultaneously.
6. As engine starts, release start switch.
7. Release oil pressure by-pass, as oil pressure rises above 40 psi.
8. Adjust pump speed gradually to meet fueling requirements.
9. Decrease idle speed to 800 RPM.
10. Close discharge and suction valves, if opened for mission.
11. Push-in emergency stop switch.
12. Perform post-operational checks.

**CHAINED EVENTS:**

1391-XENG-1010

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
2. TM 10-4320-343-14 350 GPM Pump
3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1010:** Operate a 600 GPM pump assembly

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The 600 GPM pump is capable of pumping all types and grades of automotive and aviation fuel. This pump is used by the AAFS and TAFDS systems. The six major assemblies of the 600 GPM pump are the suction manifold assembly, suction strainer assembly, pumps housing, air eliminator assembly, check valve assembly, and discharge manifold assembly.

**BILLETS:** Bulk Fuel Specialist, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a 600 GPM Pump Assembly and references.

**STANDARD:** To dispense fuel in support of a tactical fuel system.

**PERFORMANCE STEPS:**

1. Perform pre-start checks.
2. Set engine instrument switch to "ON".
3. Ensure alternating charge light is on, indicating the battery is charged.
4. Ensure engine shut-down control is pushed "IN".
5. Ensure throttle control is turned all the way in, clockwise to the "IDLE" position.
6. Depress and hold Oil By-Pass Switch, and simultaneously press the starter button.
7. Release Oil By-Pass as oil pressure gauge indicates 40 psi.
8. Increase idle speed to 1200 RPM to prime pump.
9. Once pump is primed, increase engine speed to 1800 RPM for five minutes.
10. Adjust to operating speed as required.
11. Decrease engine speed to idle speed (1200 RPM) for 3 to 5 minutes.
12. Close discharge and suction valves.
13. Pull-out Engine Shutdown Control and turn off Engine Instrument Panel Switch.
14. Perform post-operational checks.

**RELATED EVENTS:**

1391-XENG-1009

**REFERENCES:**

1. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
2. TM 4930-15 & P/ 3 Operation and Maintenance Manual, with Illustrated

- Repair Parts List (600 GPM F)
3. TM 4930-15/2 Installation, Operation, Maintain and Repair Instructions, Pump assembly 600 GPM (US690 ACD-1)
  4. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM
- 

**1391-XENG-1011:** Set-up a tactical fuel system for recirculation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Recirculation is the process of transferring fuel through the system's hoses and refueling nozzles and back into the fuel source. Recirculation reduces contamination resulting from the interaction between fuel products and hose deterioration products, and allows the filtering mechanisms to remove contaminants after hose line maintenance.

**BILLETS:** Bulk Fuel Specialist, Dispensing Operator, Pump Operator, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a tactical fuel system and references.

**STANDARD:** To ensure the product is clean and dry.

**PERFORMANCE STEPS:**

1. Count number of sections of installed hoses.
2. Calculate number of gallons contained in hose using references.
3. Compute recirculation time.
4. Connect hose to recirculate through all components.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  3. TM 9130-12 Fuel Handling Procedures (Liquid Fuel)
- 

**1391-XENG-1012:** Place firefighting equipment

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** While every effort is made to reduce the risk of fire and explosion during fuel handling operations, it is necessary to plan for the possibility of a fuel fire.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided necessary firefighting equipment, layout of tactical fuel system (TFS), and references.

**STANDARD:** To ensure adequate firefighting protection throughout a tactical fuel system.

**PERFORMANCE STEPS:**

1. Review fuel system layout.
2. Place firefighting equipment in proper position as listed in references.
3. Perform operational checks.
4. Ensure each TAU or CAFS-M has at least three (3) full sets of fire fighting protective clothing positioned with the extinguisher.
5. Assign Bulk Fuel Specialist from each fuel team and work-shift to specific duties for manning an fire extinguisher in case of emergency.
6. Ensure fire fighting protective clothing assigned to each fuel shift is properly sized for the specialist.
7. Use storage containers with easy access to store fire fighting protective clothing.
8. Store containers next to the fire extinguishers to allow easy access in case of emergency.
9. Ensure containers are clearly marked "Fire Suits" for easy identification in an emergency.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 07661C-14/1 Extinguisher, Fire, Dry Chemical and Aqueous Film Forming Foam, Self Contained, Model D-4
  3. TM 10668A-13&P Compressed Air Foam System-Mobile
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1391-XENG-1013:** Perform aircraft refueling point operations

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Dispensing Operator, Pump Operator

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel system, trained personnel, proper personal protective equipment, and references.

**STANDARD:** To ensure fuel is dispensed to aircraft in accordance with the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Prior to refueling operations, recirculate fuel and draw samples.
3. Ensure plane captain has checked for hot brakes.
4. Ensure all electronic devices not required for refueling operations are secured.
5. Ensure aircraft is chocked.



6. Attach bonding cable between the refueling equipment and the aircraft.
7. Pull out the pantograph/hose are placed in the proper position.
8. Give nozzle to nozzle operator (plane captain).
9. Ensure meter is zeroed.
10. Fuel aircraft.
11. When directed stop refueling.
12. Secure nozzle and grounding cable.
13. Complete proper paperwork. (DD Form 1898, Tallysheet, etc.)

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. FM 10-67-2 Petroleum Laboratory Testing and Operations
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCWP 4-11.6 Bulk Liquid Operations
  5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  6. NAVAIR 00-80T-115 Expeditionary Airfield NATOPS Manual
  7. NAVAIR 06-5-502 Aircraft Refueling For Shore Activities
  8. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
  9. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  10. UNIT SOP Unit's Standing Operating Procedures
- 

**1391-XENG-1014:** Execute an oil spill contingency plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Laboratory Technician, Pump Operator, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided an operations order, operating tactical fuel system, an oil contingency plan, and references.

**STANDARD:** To contain fuel and oil spills and immediately reduce or eliminate the risk of personnel injury.

**PERFORMANCE STEPS:**

1. Halt pumping action.
2. Close all valves.
3. Halt pumping operations.
4. Contain spill.
5. Notify immediate supervisor of incident.
6. Use fire prevention equipment and procedures as required.
7. Commence clean-up.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
2. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing

3. MCO 3500.27B Operational Risk Management
  4. MCO P5090.2 Environmental Compliance and Protection Manual
  5. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  6. MCWP 4-11.6 Bulk Liquid Operations
  7. NAVFAC P-908 Oil Spill Control for Inland Waters and Harbors
  8. OPNAVINST 5090.1\_ Environmental and Natural Resources Program Manual
  9. TC 5-400 w/CH #1 Unit Leader's Handbook for Environmental Stewardship
  10. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  11. UNIT SOP Unit's Standing Operating Procedures
  12. Federal, State, and Local Environmental Regulations
  13. Local Standard Operating Procedures (SOP)
- 

**1391-XENG-1015:** Operate a Twin Agent Unit (TAU)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Twin Agent Unit (TAU) fire extinguisher is designed to fight fuel fires within the TFS systems. The TAU is skid mounted and is equipped with two fire fighting agents and 150-feet of firefighting twin hose line for each agent. These agents are dry chemical (Potassium Bicarbonate (Purple K Powder) and Aqueous Film Forming Foam (AFFF). The dry chemical extinguishes fires by a smothering action. Water mixed with the AFFF concentrate forms foam, which is then used to form a film over the extinguished area, effectively preventing re-ignition.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Dispensing Operator, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a Tactical Fuel System (TFS) site, Twin Agent Unit (TAU), and references.

**STANDARD:** To provide adequate fire fighting protection throughout a tactical fuel system per the current references.

**PERFORMANCE STEPS:**

1. Perform pre-operational serviceability checks.
2. Don fire fighting personal protective equipment (PPE).
3. Charge AFFF nitrogen cylinder by opening respective charge valve.
4. Charge PKP nitrogen cylinder by opening respective charge valve.
5. Deploy TAU hose line to fire site.
6. Perform post operational checks.

**CHAINED EVENTS:**

1391-XENG-1035                      1391-XENG-1012

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
2. TM 07661C-14/1 Extinguisher, Fire, Dry Chemical and Aqueous Film Forming Foam, Self Contained, Model D-4

3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

**SUPPORT REQUIREMENTS:**

**MATERIAL:** Potassium Bicarbonate (Purple K Powder)-PKPAqueous Film Forming Foam (AFFF)

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**1391-XENG-1016:** Operate Compressed Air Foam System- Mobile (CAFS-M)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Compressed Air Foam System- Mobile is designed to be mounted in the High Mobility Multipurpose Wheeled Vehicle (HMMWV) to provide mobile fuel fire fighting capabilities for the various TFS systems. The CAFSM provides supplemental coverage for the TAU and for remote refueling sites not conducive to deployment of the TAU. It utilizes Aqueous Film Forming Foam (AFFF) as its primary firefighting agent to extinguish fires.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Dispensing Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a CAFS- M and references.

**STANDARD:** To ensure adequate firefighting protection throughout a tactical fuel system (TFS).

**PERFORMANCE STEPS:**

1. Perform pre-operational serviceability checks.
2. Don firefighting protective clothing, boots, and hood.
3. Unroll hose completely.
4. Set control panel to operational requirements per the reference.
5. Set speed control to full throttle and engage CAB Pump Switch.
6. Open nozzle and extinguish fire.
7. Perform post-operational checks per the reference.

**REFERENCES:**

1. TM 10668A-13&P Compressed Air Foam System-Mobile
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
- 

**1391-XENG-1017:** Obtain an all-level fuel sample

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** All samples taken will be in accordance with standard procedures described in ASTM D-4057, ASTM D-270, and MIL-STD-3004. Precautions are necessary to ensure a representative sample. Improperly taken samples can completely invalidate a test.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Laboratory Technician, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a sampling and gauging kit, API Tables 5B & 6B, clean sample container, and references.

**STANDARD:** To ensure a three level sample is pulled for testing purposes.

**PERFORMANCE STEPS:**

1. Ensure required safety personnel are in place.
2. Submerge close sample container to the bottom of tank.
3. Open the sampler and raise the container at the rate that container will be 75 to 80% full when removed from tank.
4. Complete Sample Tag (DD Form 1804).
5. Deliver sample to test facility.

**RELATED EVENTS:**

1391-XENG-1019                      1391-XENG-1021

**REFERENCES:**

1. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
2. ASTM D-270 Standard Method of Sampling Petroleum and Petroleum Products
3. ASTM D-4057 Standard Practice for Manual Sampling of Petroleum Products
4. FM 10-67-1 Concepts and Equipment of Petroleum Operations
5. FM 10-67-2 Petroleum Laboratory Testing and Operations
6. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
7. NAVEDTRA 10883-B Fundamentals of Petroleum
8. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1018:** Conduct sampling procedures from a closed fuel system

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Dispensing Operator, Laboratory Technician, Pump Operator, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel system, clean sample bottles, and references.

**STANDARD:** To ensure testing procedures are performed in accordance with the references.

**PERFORMANCE STEPS:**

1. Recirculate proper amount of fuel.
2. While pump is still recirculating the fuel connect sampling apparatus to

- nozzle.
3. Rinse sample container.
  4. Draw appropriate amount of fuel.
  5. Submit sample for testing.

**RELATED EVENTS:**

1391-XENG-1029	1391-XENG-1028	1391-XENG-1027
1391-XENG-1024	1391-XENG-1017	1391-XENG-1023
1391-XENG-1022	1391-XENG-1019	1391-XENG-1025

**REFERENCES:**

1. ASTM D-4057 Standard Practice for Manual Sampling of Petroleum Products
  2. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1019:** Conduct visual fuel tests

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Also known as the Color and Appearance Test, this test is conducted to ensure the fuel is clean, bright, and free of visible contaminants. The fuel color should agree with the type of fuel.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a clean and clear sample bottle, fuel source, and references.

**STANDARD:** To ensure the fuel is the clean, bright, and correct color in accordance with the references.

**PERFORMANCE STEPS:**

1. Collect a fuel sample in a clean container downstream of the filter separator, preferably at the nozzle.
2. Observe and record the color of the fuel per the references.
3. Swirl the fuel in container to form a vortex (whirlpool).
4. Ensure sediment results fall within acceptable limits per the references.
5. Check fuel sample for cloudiness or water in the sample, and ensure the water in the sample falls within acceptable limits.
6. Stop fuel operations and notify supervisor of incorrect fuel color or evidence of microbiological growth.

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and

- Related Products
3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
  5. NAVEDTRA 10883-B Fundamentals of Petroleum
  6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1020:** Complete Petroleum Sample Tag (DA Form 1804)

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician, Pump Operator

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel sample and fuel sample tag (DA Form 1804).

**STANDARD:** To identify different samples of fuel for testing purposes.

**PERFORMANCE STEPS:**

1. Review the appropriate section of the references.
2. Review Standard Operating Procedures (SOP).
3. Document and submit per the references.

**RELATED EVENTS:**

1391-XENG-1019                      1391-XENG-1018                      1391-XENG-1017

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
  2. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  3. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1021:** Check water level with water finding paste

**EVALUATION-CODED:** NO **SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provide a sample gauging kit, water finding paste, and references.

**STANDARD:** To determine the total amount of water in a fuel storage tank.

**PERFORMANCE STEPS:**

1. Apply thin coat of water finding paste at the bottom of measuring tape/device.
2. Insert the measuring device into tank.
3. Leave measuring device in position for 5 to 10 seconds for light products; 15 to 30 seconds for heavier products.
4. Remove measuring tape/device from storage tank.
5. Observe water cut on scale.
6. Record water cut to nearest eighth of an inch.
7. Repeat steps 1 thru 7 until two consecutive readings are obtained.

**CHAINED EVENTS:**

1391-XENG-1017                      1391-XENG-1019

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. STP 1077F25-SM-TG Soldiers Manual & Training Guide, MOS 92F, Petro Supply Specialist Skills Level 2,3,4, &5
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1022:** Conduct a gravity (API) test

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Each type and grade of fuel has a characteristic API gravity range. API gravity confirms the identity of fuel received from multi-product tanks and helps prevent commingling of fuel types.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a clean sample container, appropriate thermo-hydrometer, hydrometer cylinder, Tables 5B and 6B, MIL- STD-3004, and references.

**STANDARD:** To ensure the observed gravity is corrected to 60 degrees Fahrenheit.

**PERFORMANCE STEPS:**

1. Fill cylinder two-thirds full with sample.
2. Place thermo-hydrometer into cylinder for 1 minute.
3. Record API reading at meniscus line.
4. Record observed temperature appearing on thermo-hydrometer scale.
5. Remove thermo-hydrometer.
6. Cross reference observed temperature and hydrometer reading with Table 5B.
7. Correct observed API to 60 degrees Fahrenheit using Table 6B.
8. Compare corrected API to specifications for the product utilizing MIL STD 3004.

**REFERENCES:**

1. ASTM D 1298 Standard Test method for Density, Relative Density (Specific Gravity)
2. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
3. ASTM D-287 Standard Test Method for API Gravity
4. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products

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**1391-XENG-1023:** Convert API gravity to specific gravity

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Each type and grade of fuel has a characteristic API gravity range. API gravity confirms the identity of fuel received from multi-product tanks and helps prevent commingling of fuel types.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Tables 5B and 6B, required formulas, API Gravity, and references.

**STANDARD:** To determine specific gravity and volume correction.

**PERFORMANCE STEPS:**

1. Calculate API Gravity at 60 degrees Fahrenheit.
2. Compute volume correction at 60 degrees Fahrenheit.
3. Convert API Gravity to Specific Gravity.

**RELATED EVENTS:**

1391-XENG-1017                      1391-XENG-1022

**REFERENCES:**

1. ASTM D-270 Standard Method of Sampling Petroleum and Petroleum Products
2. ASTM D-287 Standard Test Method for API Gravity
3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1024:** Convert specific gravity to API gravity

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Convert Specific Gravity to API Gravity.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician

**GRADES:** PVT, PFC, LCPL



**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given Table 5B and 6B, required formulas, specific gravity, and references.

**STANDARD:** To determine API Gravity and volume correction.

**PERFORMANCE STEPS:**

1. Calculate API Gravity to 60 degrees Fahrenheit.
2. Compute volume correction to 60 degrees Fahrenheit.
3. Convert API to Specific Gravity.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1025:** Conduct a B-2 anti-icing additive test

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** This kit provides the necessary equipment for determining the percent volume (%v) of anti-icing additive (AIA) also known as FSII (Fuel System Icing Inhibitor) in jet turbine fuels. FSII performs two important functions that help to avert significant safety of in-flight problems.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a sample of aviation fuel, a B-2 Anti-Icing Test Kit, and references.

**STANDARD:** To ensure the percent volume of Fuel System Icing Inhibitor in the fuel sample is within acceptable limits.

**PERFORMANCE STEPS:**

1. Obtain a fuel sample in a clean/dry container.
2. Set-up apparatus and fill aluminum dish one half full of water (distilled or tap).
3. Measure 160 ml of fuel into graduated cylinder.
4. Transfer 160 ml fuel sample into separatory funnel.
5. Pour distilled or tap water into aluminum dish from water bottle supply.
6. Cap funnel and shake vigorously for 5 minutes.
7. Using piston pipette, add exactly 2 ml of water to separatory funnel.
8. Set separatory funnel in ring stand.
9. Allow fluid to rest for 2 minutes.
10. Calibrate refractometer.
11. Open drain cock of separatory funnel, allow 5 to 7 drops of fluid to collect in aluminum dish.
12. Transfer fluid from aluminum dish to refractometer window
13. Close refractometer cover.

14. Observe the position of the shadow line.
15. Properly dispose of the liquids, wash apparatus in soap/water, and dry all items.

**PREREQUISITE EVENTS:**

1391-XENG-1017                      1391-XENG-1018

**REFERENCES:**

1. D5006-96 Standard Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels.kym
  2. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  3. FM 10-67-2 Petroleum Laboratory Testing and Operations
  4. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  5. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-1026:** Test aviation fuel utilizing the Aviation Fuel Test Kit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Millipore Aviation Fuel Contaminant Test Kit is a one-person, portable kit consisting of components and test equipment capable of determining the particulate contaminant level, API Gravity and temperature, and free water content in aviation fuel samples.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Laboratory Technician

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given an Aviation Test Kit, fuel sample, and references.

**STANDARD:** To ensure the amount of particulate contaminant and water are within acceptable limits.

**PERFORMANCE STEPS:**

1. Review references.
2. Assemble and calibrate the Aqua-Glo tester per the reference (Water).
3. Prepare the Aqua-Glo test by gathering all required materials.
4. Flush three liters of fuel through sampler.
5. In the test position allow 500 milliliters of fuel to flow through sampler.
6. Open the stainless steel monitor and remove the free water detector pad.
7. Place the waterpad into the Aqua-Glo water detector.
8. Record the results from the Aqua-Glo detector.
9. Prepare to test by gathering all required materials (Particulate Contaminant).
10. Flush three liters of fuel through sampler.

11. In the test position allow 1000 milliliters of fuel to flow through sampler.
12. Attach the monitor on the syringe and pull back and hold for five seconds.
13. Compare color shade of monitor pad to those of color standards booklet.
14. Report test results.
15. If color test fails, notify immediate supervisor and perform second test using the gravimetric method.

**PREREQUISITE EVENTS:**

1391-XENG-1018	1391-XENG-1017	1391-XENG-1023
1391-XENG-1022	1391-XENG-1019	

**REFERENCES:**

1. D2276-00 Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
2. FM 10-67-2 Petroleum Laboratory Testing and Operations
3. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
4. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
6. NAVEDTRA 10883-B Fundamentals of Petroleum
7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
8. TM 5-6630-218-10 Aviation Fuel, Contaminant, Test Kit

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**1391-XENG-1027:** Establish a calibration curve

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The calibration curve is used to convert the meter readings of the Contaminated Fuel Detector to contamination levels in milligrams per liter (mg/L).

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Given a Contaminated Fuel Detector (CFD), Wratten Calibration Filters, Calibration Curve Chart, and references.

**STANDARD:** To ensure the Contaminated Fuel Detector is calibrated prior to performing solid contamination tests.

**PERFORMANCE STEPS:**

1. Turn the light source switch to the "ON" position and allow to warm-up for AT LEAST three (3) minutes.
2. Thoroughly dry and fuel in or on filter slide receptacle before calibration.
3. Verify Wratten Calibration Filters are for specified Contaminated Fuel Detector Kit.
4. Insert filter holder slide receptacle and ensure it is fully seated.

5. Adjust the meter until a steady milliammeter reading of .600ma is obtained.
6. Insert first calibration filter into photocell.
7. Record reading displayed on LCD Milliammeter.
8. Remove calibration filter from photocell.
9. Return filter to package.
10. Insert second calibration filter into photocell.
11. Remove second calibration filter from photocell.
12. Record reading displayed on LCD Milliammeter.
13. Return second filter to package.
14. Subtract lower of the two readings from higher reading.
15. Plot the difference on Calibration Curve Chart (Change in Reading, Milliamps) axis on left vertical side of the graph.
16. From this point, extend an imaginary horizontal line.
17. Find equivalent mg/L at bottom of chart as stated on CALIBRATION filter package.
18. From this point, extend imaginary straight vertical line.
19. Make mark where both imaginary lines cross.
20. Plot second plot on left (vertical) axis at the 0.01 milliamp change in reading.
21. Draw straight line between two points (extend line to edge of chart).

**RELATED EVENTS:**

1391-XENG-1028

**REFERENCES:**

1. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
2. TM 700001-M8 Combine Contaminated Fuel Detector Kit

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**1391-XENG-1028:** Conduct a Contaminated Fuel Detector (CFD) Test

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The CCFD is a portable instrument which will determine the solid and/or free water contamination in aviation fuels. The level of solid contamination is measured by using the principle of light transmission through a suitable membrane filter. A sample of fuel is filtered through the membrane and contaminating particles are retained on the surface.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Contaminated Fuel Detector, 0.65 Micron Filter Elements, fuel sample, Calibration Curve Chart with an established Calibration Curve, and references.

**STANDARD:** To ensure the milligrams per liter/gallon of sediment in the fuel sample is within acceptable limits.

**PERFORMANCE STEPS:**

1. Obtain 800 milliliter fuel sample.
2. Calibrate the CFD as required and per the reference.
3. Allow light source to warm-up at least three minutes.
4. Ensure the fuel flask is empty and drain cock valve is closed.
5. Place two millipore filters on filter base and stopper assembly.
6. Assemble the filter base/stopper assembly and bottle receiver assembly (with filter inside).
7. Place bottle receiver assembly end of filter holder assembly over the top 32 oz polyethylene sample bottle.
8. Insert grounding wire into grounding port located adjacent to the drain cock valve.
9. Insert entire unit (filter base/stopper assembly, bottle receiver assembly {i.e.-filter holder assembly}, and 32 oz fuel sample bottle) into fuel flask opening.
10. Start pump.
11. After all fuel has drained from bottle, remove bottle to exposing millipore filters.
12. Stop pump after all fuel has passed through the filters.
13. Drain fuel from the fuel flask by opening drain cock valve.
14. Using the tygon drain tubing, drain fuel into 16 oz wash bottle.
15. Adjust potentiometer to 0.600 ma.
16. With 16 oz wash bottle, place small amount of fuel into wetting dimple located on the working surface of the CFD.
17. Using forceps, pick-up top millipore filter and place in wetting dimple for a couple seconds.
18. Open filter slide tray and place top millipore filter in filter receptacle.
19. Return (insert) filter slide tray into measuring position.
20. Record reading on the LCD milliammeter.
21. Remove filter, return (insert) filter slide tray.
22. Ensure LCD milliammeter still reads 0.600 ma, adjust as required.
23. Repeat the same steps to obtain reading of bottom millipore filter.
24. Subtract the meter readings obtained from the top and bottom millipore filters.
25. Using the Calibration Curve Chart, determine the amount of sediment.

**RELATED EVENTS:**

1391-XENG-1027

**REFERENCES:**

1. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  2. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  6. TM 700001-M8 Combine Contaminated Fuel Detector Kit
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**1391-XENG-1029:** Conduct Free Water Detector Test (FWD) using the CCFD

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The CCFD is a portable instrument which will determine the solid and/or free water contamination in aviation fuels. The level of free water contamination is measured by using the reaction between any undissolved water and sodium fluosrescein to produce a yellow-green fluorescence under ultraviolet light.

**BILLETS:** Bulk Fuel Specialist, Laboratory Technician

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Free Water Detector Kit with a Free Water Detector Standard, Free Water Detector Pads, and reference.

**STANDARD:** To ensure the parts per million of free water in the fuel sample is within acceptable limits.

**PERFORMANCE STEPS:**

1. Obtain a 500 ml fuel sample.
2. Ensure the fuel flask is empty and drain cock valve is closed.
3. Open a free water detector envelope and place a detector pad (orange-side up) on filter base/stopper assembly.
4. Attach filter base/stopper assembly to bottle receiver assembly.
5. Shake the sample bottle containing the 500 ml fuel sample vigorously for approx 30 seconds.
6. Insert ground wire into grounding port.
7. Immediately after shaking, turn on vacuum pump, unscrew bottle cap, and place filter receiver assembly firmly on 32 oz bottle.
8. Place entire filter holder assembly and bottle into fuel flask opening.
9. After 500 ml fuel sample have passed through Free Water Detector pad, turn off vacuum pump IMMEDIATELY.
10. Remove bottle and filter holder assembly.
11. With forceps, remove Free Water Detector pad from filter base/stopper assembly.
12. Place Free Water Detector pad (orange-side up) in the free water detector slide depression.
13. Activate ultra-violet light by placing light switch in "ON" position and holding starter switch for 2 to 3 seconds.
14. Shake the sample bottle containing the 500 ml fuel sample vigorously for approx 30 seconds.
15. Look through the view port of the kit to compare fluorescence of the test pas with that of the set of standards to determine the amount of free water.
16. Drain fuel from fuel flask.
17. Immediately after shaking, turn on vacuum pump, unscrew bottle cap, and place filter receiver assembly firmly on 32 oz bottle.
18. Record results per the local SOP.
19. Place entire filter holder assembly and bottle into fuel flask opening.
20. After 500 ml fuel sample have passed through Free Water Detector pad, turn off vacuum pump IMMEDIATELY.

21. Remove bottle and filter holder assembly.
22. With forceps, remove Free Water Detector pad from filter base/stopper assembly.
23. Place Free Water Detector pad (orange-side up) in the free water detector slide depression.
24. Activate ultra-violet light by placing light switch in "ON" position and holding starter switch for 2 to 3 seconds.
25. Look through the view port of the kit to compare fluorescence of the test pas with that of the set of standards to determine the amount of free water.
26. Drain fuel from fuel flask.
27. Record results per the local SOP.

**REFERENCES:**

1. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
  2. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
  3. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  6. TM 700001-M8 Combine Contaminated Fuel Detector Kit
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**1391-XENG-1030:** Conduct scheduled pump preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Pump Operator, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a pump, required tools, oil, fuel, preventative maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventative maintenance roster.
2. Review the references.
3. Perform pump scheduled preventative maintenance.

4. Check for proper operation.
5. Document the maintenance performed.

**RELATED EVENTS:**

1391-XENG-1010

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO 4790.1B Marine Corps Integrated Management System (MIMMS) Introduction Manual
4. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
5. MCO P4790.2C MIMMS Field Manual
6. TM 09003A/ 09002A-15&P/lw/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components (List Sixcon)
7. TM 10-4320-343-14 350 GPM Pump
8. TM 4700-15/1H Ground Equipment Record Procedures
9. TM 4930-15 & P/ 3 Operation and Maintenance Manual, with Illustrated Repair Parts List ( 600 GPM F )
10. TM 5-4320-266-14 350 GPM Pump
11. TM 5-4320-303-10 600 GPM Pump
12. TM 5-4320-309-14 125 GPM Pump
13. TM 96702D-14/1 Pump Centrifugal Engine, 600 GPM

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**1391-XENG-1031:** Conduct 500 gallon collapsible drum preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a 500 gallon collapsible drum, tool, preventative maintenance roster, and references.

**STANDARD:** to ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Inspect vents to ensure no obstructions.
2. Inspect inlet and outlet fittings.
3. Inspect position and operation of gate elbow valves.



4. Visually inspect tank drum exterior for leaks, corrosion, and dry rot.
5. Inspect water protection, guidelines, and camouflage.
6. Remove accumulation of water in tank.
7. Visually inspect general integrity of tank position in berm.
8. Perform air leakage test by filling drum with air.
9. Perform corrective maintenance if required.

**RELATED EVENTS:**

1391-XENG-1003                      1391-XENG-1004

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
4. MCO P4790.2C MIMMS Field Manual
5. TM 04486B-15 Drum, Collapsible Liquid Fuel 500 GAL
6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM 4790-5 Users Manual MIMMS

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**1391-XENG-1032:** Conduct filter separator preventive maintenance/filter replacement

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a filter separator, tools, fittings, filters, soap, water, o-rings, cleaning solvent, preventative maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventative maintenance roster.
2. Review references.
3. Check water level sight gauge.
4. Inspect for loose or damaged valves, lines, and fittings.
5. Inspect differential pressure indicator and gauge for secure mounting.

6. Repair any discrepancies or refer them for repair as required.
7. Check frame for broken welds or cracks, repair as required.
8. Replace any broken or frayed cables, and broken and cracked clamps on the ground cable assembly.
9. Install dust plugs, dust caps, and gaskets after operation.
10. Replace filters if required.
11. Document any maintenance performed.

**RELATED EVENTS:**

1391-XENG-1021	1391-XENG-1002	1391-XENG-1017
1391-XENG-1018	1391-XENG-1029	1391-XENG-1028
1391-XENG-1027	1391-XENG-1026	1391-XENG-1025
1391-XENG-1011	1391-XENG-1013	1391-XENG-1006
1391-XENG-1005	1391-XENG-1004	1391-XENG-1003
1391-XENG-1019		

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
4. MCO P4790.2 MIMMS Field Procedures Manual
5. TM 09003A/ 09002A-15&P/lw/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components ( List Sixcon )
6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
7. TM 4700-15/1H Ground Equipment Record Procedures
8. TM 5-4330-217-12 Operator and Organizational Maintenance Manual, Filter Separator, Liquid 100 GPM, Frame Mounted
9. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

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**1391-XENG-1033:** Conduct fuel monitor (go/no-go) preventive maintenance/fuse replacement

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a fuel monitor, tool, fuses, o-rings, cleaning solvent, soap, water, preventative maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Review preventive maintenance roster.
3. Inspect for loose tubing and fittings.
4. Inspect for damaged packaging.
5. Replace fuses if required.
6. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1029	1391-XENG-1028	1391-XENG-1026
1391-XENG-1025	1391-XENG-1019	1391-XENG-1017
1391-XENG-1003	1391-XENG-1011	1391-XENG-1013
1391-XENG-1006	1391-XENG-1005	1391-XENG-1002
1391-XENG-1004	1391-XENG-1018	

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
4. MCO P4790.2C MIMMS Field Manual
5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
6. TM 09003A/ 09002A-15&P/lw/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components ( List Sixcon )
7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
8. TM 4700-15/1H Ground Equipment Record Procedures
9. TM 5-4330-217-12 Operator and Organizational Maintenance Manual, Filter Separator, Liquid 100 GPM, Frame Mounted
10. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

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**1391-XENG-1034:** Conduct collapsible tank preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provide a fuel storage tank, tools, low pressure steam, soap, water, preventative maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventative maintenance roster.
2. Review references.
3. Inspect vent to ensure there are no obstructions.
4. Inspect for punctures or tears.
5. Inspect for seam looseness.
6. Inspect for loose tank fitting reinforcement patch.
7. Inspect for loose outside coating.
8. Inspect for loose, broken, or missing tank handles.
9. Inspect for pinholes.
10. Inspect to blistered fitting area.
11. Inspect for seam weeping.
12. Inspect for seam reinforcement patch.
13. Inspect for blistered fitting area.
14. Inspect for seam looseness.
15. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1039	1391-XENG-1014	1391-XENG-1005
1391-XENG-1006	1391-XENG-1011	

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
4. MCO P4790.2C MIMMS Field Manual
5. TM 09003A/ 09002A-15&P/1w/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components (List Sixcon)
6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

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**1391-XENG-1035:** Conduct Twin Agent Unit (TAU) preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive maintenance is the combination of all actions to prevent failures and detect failures early. The two parts of preventive maintenance are 1. condition monitoring (actions that detect failures) and 2. maintenance prevention (actions that prevent failures). Examples of maintenance prevention are: lubrication, alignment, balancing, operating procedures, cleaning, adjustment, and much more, which depends on the unit's authorized echelon of maintenance.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provide a Twin Agent Unit, hose cart nozzle, spanner wrench, dipstick, funnel, AFFF solution compound, dry chemical compound, preventive maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventative maintenance roster.
2. Review references.
3. Perform TAU preventive maintenance.
4. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1005                      1391-XENG-1006                      1391-XENG-1012  
1391-XENG-1015

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
3. TM 07661C-14/1 Extinguisher, Fire, Dry Chemical and Aqueous Film Forming Foam, Self Contained, Model D-4
4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
5. UM-4790-5 MIMMS-AIS Field Maintenance Procedures

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**1391-XENG-1036:** Conduct Compressed Air Foam System- Mobile (CAFS-M) preventive maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Compressed Air Foam System- Mobile, preventive maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventive maintenance rosters.
2. Review references.
3. Perform CAFS- M preventative maintenance.
4. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1016

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
  4. MCO P4790.2 MIMMS Field Procedures Manual
  5. MCWP 4-11.6 Bulk Liquid Operations
  6. TM 10668A-13&P Compressed Air Foam System-Mobile
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  8. TM 4700-15/1H Ground Equipment Record Procedures
  9. UM 4790-5 Users Manual MIMMS
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**1391-XENG-1037:** Conduct Hose Reel System (HRS) Preventive Maintenance

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a HRS, preventive maintenance roster, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventive maintenance roster.
2. Review references.
3. Perform HRS preventative maintenance.
4. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1007

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
  3. MCO P4400.160B Field Supply and Maintenance Analysis Office Program (FSMAO)
  4. MCO P4790.2C MIMMS Field Manual
  5. MCWP 4-11.6 Bulk Liquid Operations
  6. TM 10596A-13&P Marine Corps Hose Reel System
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  8. TM 4700-15/1H Ground Equipment Record Procedures
  9. UM 4790-5 Users Manual MIMMS
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**1391-XENG-1038:** Conduct preventive maintenance on Six-Con Pump and tank modules

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Preventive Maintenance Checks and Services (PMCS) are services that are performed by the operator or crew. They are performed within the interval shown and in numerical sequence within each interval as indicated by item number. The purpose of the various checks and services is to identify equipment faults (things that are wrong with the equipment), and service some points that require frequent attention.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a Six-Con Pump and Tank Module, required tools, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review preventive maintenance roster.
2. Review references.
3. Inspect pump for proper operation.
4. Inspect fittings for serviceability/accountability.
5. Inspect hoses for serviceability/accountability.
6. Inspect meters for serviceability/accountability.
7. Inspect nozzles for serviceability/accountability.
8. Inspect tank module for serviceability.
9. Inspect grounding reel for serviceability
10. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1033

1391-XENG-1002

1391-XENG-1032

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4790.2C MIMMS Field Manual
4. TM 09003A/ 09002A-15&P/1w/ch1-5 Operation and Maintenance Instructions with Repair Parts List and Components (List Sixcon)
5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
6. TM 4700-15/1H Ground Equipment Record Procedures
7. UM 4790-5 Users Manual MIMMS

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**1391-XENG-1039:** Perform collapsible tank repair

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Two types of repair methods for collapsible fabric tanks are provided. One consists of mechanical patches and wooden plugs to repair small holes and cuts in collapsible fabric tanks. The other consists of a vulcanizing unit to apply patches to larger cuts in collapsible fabric tanks.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a collapsible fuel tank, fuel tank repair kit, tools, and references.

**STANDARD:** To ensure equipment is maintained in an operational status in accordance with the references.

**PERFORMANCE STEPS:**

1. Review references.
2. Perform visual inspection for leaks, weeping, punctures, tears, and blistering.
3. Perform fuel tank repairs if required.
4. Document maintenance performed.

**RELATED EVENTS:**

1391-XENG-1043	1391-XENG-1042	1391-XENG-1041
1391-XENG-1005	1391-XENG-1014	1391-XENG-1006
1391-XENG-1040		

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3000.11\_ Marine Corps Ground Equipment Resources Reporting
3. MCO P4790.2C MIMMS Field Manual
4. TM 04486B-15 Drum, Collapsible Liquid Fuel 500 GAL
5. TM 10-5430-242-12&P 3k thru 50K Collapsible Tanks
6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems



7. TM 4700-15/1H Ground Equipment Record Procedures
8. UM 4790-5 Users Manual MIMMS

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**1391-XENG-1040:** Administer first aid for fuel contact with eyes

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Laboratory Technician, Platoon Sergeant, Pump Operator, Section Leader, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for skin exposed to fuel.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Repeatedly flush thoroughly with large amounts of fresh water.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1043

1391-XENG-1041

1391-XENG-1042

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1041:** Administer first aid for inhalation of vapors

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Laboratory Technician,

Platoon Sergeant, Pump Operator, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for inhalation of vapors.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Remove victim from vapors to fresh air area.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1043                      1391-XENG-1040                      1391-XENG-1042

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1042:** Administer first aid for fuel on skin

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Laboratory Technician, Platoon Sergeant, Pump Operator, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for fuel ingestion/contact with eyes and skin.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Wet clothes first, or if not possible, ground yourself.
2. Repeatedly, rinse thoroughly with fresh water.
3. Wash skin with soapy water.
4. Seek medical assistance if necessary.
5. Replace clothing with clean items.

**RELATED EVENTS:**

1391-XENG-1043

1391-XENG-1040

1391-XENG-1041

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-1043:** Administer first aid for ingestion of fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Human and environmental hazards are inherent in any fuel handling operation. Fuel handling personnel must minimize the risk of fire, explosion, injury, illness, and environmental contamination. To attain this goal, personnel must have a thorough knowledge of the hazards involved, must strictly observe fire and safety precautions, and must closely follow spill control and containment measures.

**BILLETS:** Bulk Fuel Engineer Equipment Operator, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO, Dispensing Operator, Laboratory Technician, Platoon Sergeant, Pump Operator, Shuttlecraft Handler, Tank Operator/Line Walker

**GRADES:** PVT, PFC, LCPL

**INITIAL TRAINING SETTING:** FORMAL

**CONDITION:** Provided a situation requiring first aid for ingestion of fuel.

**STANDARD:** To reduce or eliminate the risk of personal injury.

**PERFORMANCE STEPS:**

1. Keep victim calm.
2. Seek medical assistance immediately.

**RELATED EVENTS:**

1391-XENG-1042

1391-XENG-1040

1391-XENG-1041

**REFERENCES:**

1. MCO P5100.8 Marine Corps Occupational Safety and Health Program Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**19005. 2000-LEVEL INDIVIDUAL TRAINING EVENTS**

**1391-XENG-2001:** Establish an operational Tactical Petroleum Laboratory Medium (TPLM)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The TPLM has been designed to provide an organic quality control capability for bulk fuel operations in the field. It provides the capability to test suspect deliveries for acceptability and suitability, and will permit captured fuels to be tested for suitability as well.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSST

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a TPLM, generator, air conditioning unit, water source, and references.

**STANDARD:** To provide quality assurance of Class III products.

**PERFORMANCE STEPS:**

1. Review references.
2. Review unit Standard Operating Procedures.
3. Identify set-up location.
4. Unload all essential equipment/materials that are required.
5. Supervise connection of all support equipment.
6. Supervise pre-operational checks and services on external/internal controls and indicators.
7. Perform pre-operational checks on testing equipment.
8. Conduct C-type testing per mission requirements.
9. Follow daily shutdown and preventative maintenance requirements per the reference.

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations
2. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
3. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
4. TM 10188A-14&P/1 Operator's Organizational & Intermediate Maintenance Manual with Parts List TPLM
5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-2002:** Conduct operations using the Tactical Petroleum Laboratory Medium (TPLM)

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

29 May 07

**DESCRIPTION:** The TPLM has been designed to provide an organic quality control capability for bulk fuel operations in the field. It provides the capability to test suspect deliveries for acceptability and suitability, and will permit captured fuels to be tested for suitability as well.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Laboratory Technician

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an established TPLM, fuel sample, and references.

**STANDARD:** To conduct B-2 level tests on fuel samples in accordance with fuel specifications.

**PERFORMANCE STEPS:**

1. Review appropriate fuel specifications.
2. Review unit Standard Operating Procedures.
3. Set-up TPLM.
4. Perform appropriate test on fuel in accordance references.
5. Report test results as required.

**RELATED EVENTS:**

1391-XENG-1029	1391-XENG-1028	1391-XENG-1027
1391-XENG-1026	1391-XENG-1025	1391-XENG-1017
1391-XENG-1023	1391-XENG-1022	1391-XENG-1020
1391-XENG-1019	1391-XENG-1018	1391-XENG-1024

**REFERENCES:**

1. ASTM D 1298 Standard Test method for Density, Relative Density (Specific Gravity)
2. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
3. ASTM D-287 Standard Test Method for API Gravity
4. ASTM D-4057 Standard Practice for Manual Sampling of Petroleum Products
5. D2276-00 Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
6. D5006-96 Standard Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels.kym
7. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
8. FED-STD 791 Lubricants, Liquid Fuel, and Related Products: Methods of Testing
9. FM 10-67-2 Petroleum Laboratory Testing and Operations
10. MCWP 4-11.6 Bulk Liquid Operations
11. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
12. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
13. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
14. NAVAIRINST 10340.3B Maintaining Quality and Limiting Contamination of Aircraft Fuels
15. TM 05684C/05685B-12 MEP-3 Generator Set
16. TM 06858B/06859D-12 MEP-5 Generator Set
17. TM 10188A-14&P/1 Operator's Organizational & Intermediate Maintenance

Manual with Parts List TPLM  
18. TM 3835-OI/1A Marine Corps Tactical Fuel Systems  
19. TM 5-6630-218-10 Aviation Fuel, Contaminant, Test Kit  
20. TM 700001-M8 Combine Contaminated Fuel Detector Kit

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Air Conditioning Unit, Generator

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**1391-XENG-2003:** Prepare pumping schedule order

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided operation orders, communication plans, and fueling requirements.

**STANDARD:** To support mission requirements.

**PERFORMANCE STEPS:**

1. Review operation orders.
2. Review communication plans.
3. Review local codes/regulations (if applicable).
4. Review fuel storage and distribution operation plan.
5. Designate locations for pumping.
6. List fuel requirements for using units.
7. List support personnel and equipment.
8. Supervise pumping schedule.

**RELATED EVENTS:**

1391-XENG-1007                      1391-XENG-1005                      1391-XENG-1006

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. FM 10-69 Petroleum Supply Point Equipment and Operations
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2004:** Assist in preparing preliminary environmental assessments

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided operation orders, local codes and regulations pertaining to the area of impact (if applicable), a planned fuel storage and distribution operation, SOPs, local base orders, and references.

**STANDARD:** To maintain requirements of base orders and applicable regulations.

**PERFORMANCE STEPS:**

1. Review operations order.
2. Review local codes and regulations (if applicable).
3. Review fuel storage and distribution operations plan.
4. Conduct site survey.
5. Write bulk fuel portion of preliminary environmental assessment.
6. Submit bulk fuel portion of preliminary environmental assessment to appropriate higher headquarters.

**RELATED EVENTS:**

1391-XENG-1014

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
  2. MCO P5090.2 Environmental Compliance and Protection Manual
  3. MCWP 4-11.6 Bulk Liquid Operations
  4. NAVFAC P-908 Oil Spill Control for Inland Waters and Harbors
  5. OPNAVINST 5090.1\_ Environmental and Natural Resources Program Manual
  6. TC 5-400 w/CH #1 Unit Leader's Handbook for Environmental Stewardship
  7. UNIT SOP Unit's Standing Operating Procedures
  8. Federal, State, and Local Environmental Regulations
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**1391-XENG-2005:** Supervise Tactical Fuel System Elastomeric Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSST

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical fuel system and references.

**STANDARD:** To maintain system readiness.

**PERFORMANCE STEPS:**

1. Review references.
2. Determine whether on hand TFS elastomeric component (fabric tanks/hoses) are in a shelf-life or use-life status.
3. Develop TFS elastomeric shelf/use life records.
4. Maintain TFS elastomeric shelf/use life records.
5. Prepare required shelf-life reports.
6. Submit required shelf-life reports.

7. Determine the required test and quantity of a given batch of TFS elastomeric components in order to extend shelf-life.
8. Determine required frequency of inspection of elastomeric shelf/use-life components.
9. Properly dispose of expired elastomeric components.
10. Identify expired elastomeric components.

**REFERENCES:**

1. ASTM D380 Standard Test Method for Rubber Hose
  2. DLAR 140.55 Reporting of Item and Packaging Discrepancies
  3. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
  4. MCO 4030.36 Marine Corps Packing Manual
  5. MCO 4030.40A Packaging of Hazardous Material
  6. MCO 4140.5 USMC Shelf-Life Program
  7. MCO 4450.13 Joint Reg for Safeguarding Sensitive Inventory Items,
  8. MIL-STD-109 Inspection Terms and Definitions
  9. MIL-STD-129 Military Marking for Shipment and Storage
  10. MIL-STD-2073-1C Standard Practice for Military Packing
  11. MIL-STD-2073-2B Packaging Requirement Code
  12. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  13. TM 4700-15/1H Ground Equipment Record Procedures
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**1391-XENG-2006:** Identify tactical fuel system embarkation requirements

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Embarkation NCO

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provide a Table of Equipment, mission requirements, and references.

**STANDARD:** To ensure proper movement of required equipment.

**PERFORMANCE STEPS:**

1. Identify Equipment Density List
2. Validate operational timeline with mission requirements.
3. Validate inventory.
4. Validate load plan with embarkation representatives.

**REFERENCES:**

1. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
2. MCRP 5-12D Organization of Marine Corps Forces
3. MCWP 4-1 Logistics Operations
4. MIL-STD-129 Military Marking for Shipment and Storage
5. MIL-STD-2073-1C Standard Practice for Military Packing
6. MIL-STD-2073-2B Packaging Requirement Code



7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
8. UNIT SOP Unit's Standing Operating Procedures

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**1391-XENG-2007:** Direct bulk fuel site construction/installation

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a fuel distribution plan with a system layout, necessary equipment, engineer equipment operations, and references.

**STANDARD:** To support mission requirements.

**PERFORMANCE STEPS:**

1. Coordinate tactical fuel preparation requirements (site clearing, road improvements/construction, and earth berm construction for fabric fuel tanks) with unit engineers.
2. Supervise installation in a prepared site.
3. Monitor adherence to developed schedule.
4. Provide guidance and assistance to engineer personnel during preparation.
5. Coordinate tactical fuel preparation requirements (site clearing, road improvements/construction, and earth berm construction for fabric fuel tanks) with unit engineers.
6. Supervise installation in a prepared site.
7. Monitor adherence to developed schedule.
8. Provide guidance and assistance to engineer personnel during preparation.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
2. MCO P5090.2 Environmental Compliance and Protection Manual
3. MCWP 4-11.6 Bulk Liquid Operations
4. NAVAIR 00-80T-115 Expeditionary Airfield NATOPS Manual
5. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-2008:** Employ Tactical Fuels System

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Employ a fuel distribution system.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an operations order, a fuel distribution system plan, equipment, materials, personnel, and references.

**STANDARD:** To support fuel requirements specified in the operations order.

**PERFORMANCE STEPS:**

1. Compare the fuel distribution system requirements indicated in the operations order to those specified in the operations order.
2. Identify discrepancies.
3. Issue orders to correct discrepancies.
4. Issue order to implement the fuel distribution plan.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
2. ASTM D 1298 Standard Test method for Density, Relative Density (Specific Gravity)
3. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
4. ASTM D-1250 Petroleum Measurement Table, Volume Correction Factors
5. ASTM D-287 Standard Test Method for API Gravity
6. ASTM D-4057 Standard Practice for Manual Sampling of Petroleum Products
7. ASTM D380 Standard Test Method for Rubber Hose
8. D2276-00 Standard Test Method for Particulate Contaminant in Aviation Fuel by Line Sampling
9. D5006-96 Standard Test Method for Measurement of Fuel System Icing Inhibitors (Ether Type) in Aviation Fuels.kym
10. FM 10-69 Petroleum Supply Point Equipment and Operations
11. FMFM 3-1 Command and Staff Action
12. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
13. MCO 4030.36 Marine Corps Packing Manual
14. MCO 4030.40A Packaging of Hazardous Material
15. MCWP 4-11.6 Bulk Liquid Operations
16. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
17. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
18. TM 01034D-12/P1 3000 Gallon Tank
19. TM 04486B-15 Drum, Collapsible Liquid Fuel 500 GAL
20. TM 05684C/05685B-12 MEP-3 Generator Set
21. TM 07661C-14/1 Extinguisher, Fire, Dry Chemical and Aqueous Film Forming Foam, Self Contained, Model D-4
22. TM 08922A-14/1 Pump Unit, Centrifugal, Self-Priming, 125 GPM
23. TM 08990A-15&P/1 Sixcon Water Tank Module
24. TM 10188A-14&P/1 Operator's Organizational & Intermediate Maintenance Manual with Parts List TPLM
25. TM 10596A-13&P Marine Corps Hose Reel System
26. TM 10668A-13&P Compressed Air Foam System-Mobile
27. TM 11082A-OI Air Conditioner, 3 Ton, 36,000
28. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
29. TM 4700-15/1H Ground Equipment Record Procedures
30. ULSS-00 3089-15 TPLM
31. UM 4790-5 Users Manual MIMMS

- 32. UM-4790-5 MIMMS-AIS Field Maintenance Procedures
- 33. UNIT SOP Unit's Standing Operating Procedures

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**1391-XENG-2009:** Operate hose evacuation kit

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, hose evacuation kit, and references.

**STANDARD:** To ensure the hose is emptied of the petroleum product after pumping operations.

**PERFORMANCE STEPS:**

1. Ensure all required equipment is checked for serviceability.
2. Follow local unit SOP.

**REFERENCES:**

1. TM 05672B-12&P/1 Operation and Maintenance Manual with Repair Parts and Component List, Fuel Hose Evacuation Kits
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-2010:** Operate a 260 CFM compressor

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a tactical situation, 260 CFM Compressor, and references.

**STANDARD:** To support hose evacuation operations.

**PERFORMANCE STEPS:**

1. Identify controls and indicator.
2. Perform before operational checks according to Table 2-1 and DA Form 2258.
3. Set parking brake.
4. Raise or lower front leveling jack until compressor is within 15 degrees of level.
5. Open Manual Blowdown Valve to relieve pressure.
6. Close Manual Blowdown Valve after relieving pressure.
7. Close and secure all service and Hose Reel Valves.
8. Completely push-in Manual Stop Handle and simultaneously press "START"

- button and Safety Circuit By-Pass Switch.
9. When engine starts, release only the "START" button.
  10. Continue to press Circuit By-Pass until Discharge Pressure Gauge reaches 40 psi.
  11. When Discharge Pressure Gauge reaches approximately 50 psi, press Service Air Button.
  12. When pressure reaches 80 to 120 psi, compressor is ready for use.
  13. Perform during operational checks.
  14. Close all valves.
  15. Pull Manual Stop Handle (hold in out position until unit stops).
  16. Conduct after operational checks.

**RELATED EVENTS:**

1391-XENG-2009

**REFERENCES:**

1. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
2. TM 5-4310-256-15 Compressor Recip Air Hand, Truck Mounted

**SUPPORT REQUIREMENTS:**

**UNITS/PERSONNEL:** The 260 CFM Compressor must be operated by a trained and licensed Marine.

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**1391-XENG-2011:** Implement a Petroleum Quality Assurance and Control Program for petroleum products

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Unit Leader, Quality Control NCO, Section Leader

**GRADES:** SSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided certified personnel, test requirements, test equipment, and references.

**STANDARD:** To ensure compliance with sampling and testing requirements.

**PERFORMANCE STEPS:**

1. Prepare a quality assurance and control SOP in accordance with the references.
2. Ensure all sampling, test equipment, and materials are available for personnel doing quality surveillance.
3. Ensure personnel are trained in the preparation of sample tags and logs.
4. Ensure personnel comply with SOP.
5. Inspect for adherence to quality control procedures.
6. Identify and list all discrepancies.
7. Issue corrective orders.

**REFERENCES:**

1. FM 10-67-2 Petroleum Laboratory Testing and Operations

2. MCO 4855.10 Product Quality Deficiency Report (PQDR)
3. MCO 4855.10\_ Product Quality Deficiency Report (PQDR)
4. MIL HDBK 200 Quality Surveillance Handbook for Fuels, Lubricants, and Related Products
5. MIL STD 3004 Quality Surveillance Handbook for Fuels, Lubricants and Related Products
6. MIL-STD-3004 DOD standard practice Quality Surveillance for Fuels, Lubricants, and Related Products
7. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
8. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

**SUPPORT REQUIREMENTS:**

**EQUIPMENT:** Combined Contaminated Fuel Detector Kit (CCFD) Aviation Fuel Test Kit B-2 Anti-Icing Test Kit

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**1391-XENG-2012:** Prepare a Tactical Fuel Systems (TFS) for storage

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a TFS, related equipment, applicable tools, and references.

**STANDARD:** To maintain the readiness of the TFS while in organizational storage.

**PERFORMANCE STEPS:**

1. Review references.
2. Inspect components for serviceability.
3. Ensure components are clean and dry.
4. Ensure components are package per local SOP.
5. Record embarkation data in accordance with the references.

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2013:** Supervise a Maintenance Management Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Maintenance Chief, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a Table of Equipment and references.

**STANDARD:** to maintain equipment readiness.

**PERFORMANCE STEPS:**

1. Validate Marine Integrated Maintenance Management System (MIMMS) output reports.
2. Validate MIMMS input forms.
3. Ensure equipment records are properly documented/maintained.
4. Ensure Test Measurement and Diagnostic Equipment (TMDE) program in properly managed.
5. Ensure inventory control procedures are implemented in accordance with references.
6. Ensure corrective maintenance is performed in accordance with references.
7. Ensure preventative maintenance is performed with references.
8. Reconcile MIMMS output reports with Maintenance Management Officer (MMO) and unit supply.
9. Coordinate with external agencies for higher echelons of maintenance.

**REFERENCES:**

1. MCBUL 3000 Table of Marine Corps Ground Equipment Resources Reporting
  2. MCO P4790.2 MIMMS Field Procedures Manual
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  4. TM 4700-15/1H Ground Equipment Record Procedures
  5. UM 4400-15 Marine Corps User Manual (Organic Property Control)
  6. UNIT SOP Unit's Standing Operating Procedures
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**1391-XENG-2014:** Determine days of supply by type of fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO

**GRADES:** SSGT, GYSGT, MSGT, 1STSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an operations order, Table of Equipment, using units' estimates, and references.

**STANDARD:** To determine using unit's fuel requirements by type of vehicle/aircraft.

**PERFORMANCE STEPS:**

1. Review references.
2. List number and kind of equipment to be supported from Table of Equipment.
3. State if day of supply is based on estimate or use.
4. List equipment storage capability.
5. Write an estimate of day of supply by type of fuel.

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  2. MCWP 4-11.6 Bulk Liquid Operations
  3. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2015:** Plan bulk fuel system layout

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided an operation order, location of the operation, written fuel requirements of the operation, and references.

**STANDARD:** To meet the requirements of the operations order.

**PERFORMANCE STEPS:**

1. Review fuel requirements.
2. Review applicable references.
3. Conduct a site reconnaissance.
4. Conduct a terrain analysis.
5. Develop a system layout plan.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
  2. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  3. FM 10-69 Petroleum Supply Point Equipment and Operations
  4. MCO P5090.2 Environmental Compliance and Protection Manual
  5. MCWP 4-11.6 Bulk Liquid Operations
  6. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  7. NAVAIR 06-5-502 Aircraft Refueling For Shore Activities
  8. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  9. Federal, State, and Local Environmental Regulations
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**1391-XENG-2016:** Monitor Class III inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a tactical fuel system and references.

**STANDARD:** To ensure accurate product accountability.

**PERFORMANCE STEPS:**

1. Review references.
2. Conduct physical inventories as required.
3. Validate issues.
4. Validate receipts.
5. Validate transfers.
6. Identify gains.
7. Identify losses.
8. Adjust inventory records as required.

**REFERENCES:**

1. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2017:** Plan a Petroleum Fire Prevention and Safety Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a petroleum facility, firefighting equipment, and references.

**STANDARD:** To ensure safe work area for personnel and maximum protection of facilities and equipment.

**PERFORMANCE STEPS:**

1. Identify hazards within the area of responsibility.
2. Determine the number of personnel working in the area.
3. Ensure personnel receive first aid and firefighting training.
4. Ensure first aid equipment is located in the area.
5. Determine if the equipment is operating in the area without flame and spark arrestors.
6. Determine if spills, leaks, or vapors present a problem in the area.
7. Take corrective actions as necessary.
8. Develop a unit fire and safety SOP which includes firefighting and fire evacuation plans.
9. Inspect the area regularly to ensure compliance with the fire and safety program.
10. Conduct fire drills monthly to check validity of firefighting and evacuation plans.
11. Review accident reports per local policy.

**REFERENCES:**

1. FM 10-67-1 Concepts and Equipment of Petroleum Operations
2. MCO 3500.27B Operational Risk Management



3. MCWP 4-11.6 Bulk Liquid Operations
  4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  5. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  6. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
  7. UNIT SOP Unit's Standing Operating Procedures
  8. Federal, State, and Local Environmental Regulations
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**1391-XENG-2018:** Implement bulk fuel site security plan

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided a tactical situation, personnel, and references.

**STANDARD:** To safeguard personnel, troop movement, equipment and fuel locations, and tactical responses to possible threat.

**PERFORMANCE STEPS:**

1. Review references.
2. Develop a bulk fuel security plan.
3. Write a bulk fuel security site rear area security plan.
4. Coordinate with adjacent units.

**REFERENCES:**

1. FM 90-3 Desert Operations
  2. FMFM 13 MAGTF Engineer Operations
  3. FMFM 13 MAGTF Engineer Operations
  4. FMFM 6-5 Marine Rifle Squad
  5. MCWP 3-1 Ground Combat Operations
  6. MCWP 4-11.6 Bulk Liquid Operations
  7. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2019:** Develop a Petroleum Environmental Control Program

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given a petroleum unit and facilities, material safety data sheets, installation environmental SOP, local, state, federal, and/or host nation environmental laws.

**STANDARD:** To ensure minimum pollution to the environment due to petroleum operations.

**PERFORMANCE STEPS:**

1. Establish procedures to contain and clean-up POL spills in all environments using available equipment.
2. Ensure personnel know spill clean-up procedures and spill reporting procedures per environments using available equipment.
3. Monitor all operations to ensure compliance with applicable environmental laws, policies, and regulations.
4. Ensure assigned personnel receive comprehensive environmental training.
5. Establish a unit SOP which reflects applicable environmental laws, regulations, and policies.

**REFERENCES:**

1. AR 200-1 Environmental Protection and Enhancement
  2. FM 10-67-1 Concepts and Equipment of Petroleum Operations
  3. MCO P4030.19 Preparation of Hazardous Material for Military Air Shipment
  4. MCO P5090.2 Environmental Compliance and Protection Manual
  5. MCWP 4-11.6 Bulk Liquid Operations
  6. NAVFAC P-908 Oil Spill Control for Inland Waters and Harbors
  7. OPNAVINST 5090.1\_ Environmental and Natural Resources Program Manual
  8. TC 5-400 w/CH #1 Unit Leader's Handbook for Environmental Stewardship
  9. UNIT SOP Unit's Standing Operating Procedures
  10. Federal, State, and Local Environmental Regulations
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**1391-XENG-2020:** Conduct daily inventory of bulk fuel petroleum products

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided local SOPs, access to established fuel pumping site, operations orders, gauging and sampling kit, and references.

**STANDARD:** To ensure the physical inventory falls within allowances in local SOPs (product losses to not exceed allowable limits) and losses to be properly documented.

**PERFORMANCE STEPS:**

1. Sign for initial receipt of fuel.
2. Establish opening inventory.
3. Measure fuel by metering or estimate gauging.
4. Tally receipts.
5. Document receipts as directed by the references.

6. Tally issues.
7. Document issues on appropriate forms as directed by the references.
8. Tally losses.
9. Document losses on appropriate forms as directed by the references.

**REFERENCES :**

1. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
  2. MCO 4400.170 Control and Accounting for Petroleum and Related Products
  3. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual
  4. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2021:** Conduct monthly petroleum physical inventory

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Dispensing NCO

**GRADES:** CPL, SGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided previous month's bulk petroleum inventory records, issue and receipt records for the current month, and references.

**STANDARD:** To comply with the accountability program.

**PERFORMANCE STEPS:**

1. Review the references.
2. Review previous month's physical inventory and fuel on hand.
3. Calculate all fuel issued in current month.
4. Calculate all fuel received in current month.
5. Calculate the amount of fuel used and received with the amount of fuel on hand at the beginning and end of the month.
6. Calculate gains.
7. Calculate losses.
8. Submit completed physical inventory to the fuel officer.
9. Submit completed physical inventory to supply officer for adjustments.
10. Review the references.
11. Review previous month's physical inventory and fuel on hand.
12. Calculate all fuel issued in current month.
13. Calculate all fuel received in current month.
14. Calculate the amount of fuel used and received with the amount of fuel on hand at the beginning and end of the month.
15. Calculate gains.
16. Calculate losses.
17. Submit completed physical inventory to the fuel officer.
18. Submit completed physical inventory to supply officer for adjustments.

**REFERENCES :**

1. DOD 4140.25 Management of Bulk Petroleum Products, Storage and Distribution Facilities
2. MCO 4400.170 Control and Accounting for Petroleum and Related Products

3. MCWP 4-11.6 Bulk Liquid Operations
4. NAVAIR 00-80T-109 Aircraft Refueling NATOPS Manual

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**1391-XENG-2022:** Calculate feet of head to PSI

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** For a particular fuel at a given pump discharge pressure, there is a maximum height (elevation in feet) to which fuel can be pumped. This is known as Feet of Head (Hf). It is useful to measure frictional pressure loss over a distance in Feet of Head, since pressure is only measured at one given point.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given necessary mathematical equations, known specific gravity, and references.

**STANDARD:** To measure friction loss pressure over distances.

**PERFORMANCE STEPS:**

1. Convert Feet of Head to PSI.
2. Convert PSI to Feet of Head.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems

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**1391-XENG-2023:** Measure speed of fuel

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** Hose line deployment may be required between geographically separated TFS sites. An understanding of the basic dynamics of pump discharge pressure and volume flow rate in relation to friction loss, static head, distance, elevation and fuel gravity (Specific Gravity) is essential in the proper planning for hose line employment and operation.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Provided necessary formulas and references.

**STANDARD:** To obtain fuel velocity in feet per second or flow rate in gallons per minute.

**PERFORMANCE STEPS:**

1. Determine the required formulas.
2. Determine the inside diameter of pipe in feet.
3. Convert variables.
4. Calculate formulas using converted variables.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2024:** Determine the Reynolds Number

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Reynold's Number is a dimensionless value equal to velocity in feet per second times diameter in feet times kinematic viscosity in square feet per second.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the flow rate in gallons per minute, inside diameter of pipes in inches, viscosity in centistokes, and references.

**STANDARD:** To identify the flow type.

**PERFORMANCE STEPS:**

1. Convert variables.
2. Perform calculations per the reference.
3. Determine flow type.
4. Determine friction factor.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2025:** Determine the hydraulic gradient

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**DESCRIPTION:** The Hydraulic Gradient (HG) is the Head Loss (HL) in a hose line over one mile of horizontal distance. Note that any distance may apply. The HG provides an expedient method of estimating the placement of booster pump stations in a hose line trace.

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given gallons per minute, inside diameter of the fuel line, design of fuel, and references.

**STANDARD:** To ensure the booster pumps are place in the correct locations.

**PERFORMANCE STEPS:**

1. Determine hydraulic gradient base on Mogas at 60 degrees Fahrenheit.
2. Convert to designed fuel.
3. Plot hydraulic gradient on pipeline trace.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2026:** Determine the design hydraulic gradient

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Officer, Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Commander, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the total available head and references.

**STANDARD:** To ensure the booster pumps are in the proper locations.

**PERFORMANCE STEPS:**

1. Determine initial suction in Feet of Head.
2. Determine minimum suction in Feet of Head.
3. Determine pump capability in Feet of Head.
4. Plot Total Available Head.
5. Subtract minimum Suction Head.
6. Plot Hydraulic Gradient to determine second booster station.
7. Plot Hydraulic Gradient to as required to determine remaining booster station positions.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2027:** Determine head loss due to friction

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given the necessary formula, friction factor, hose length in feet, flow rate, inside diameter of hose, and references.

**STANDARD:** to measure the resistance factor.

**PERFORMANCE STEPS:**

1. Convert variables.
2. Perform calculations per the reference.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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**1391-XENG-2028:** Identify abnormal variants in head pressure

**EVALUATION-CODED:** NO

**SUSTAINMENT INTERVAL:** 12 months

**BILLETS:** Bulk Fuel Specialist, Bulk Fuel Unit Leader, Platoon Sergeant, Section Leader

**GRADES:** SSGT, GYSGT, MSGT, MGYSGT

**INITIAL TRAINING SETTING:** MOJT

**CONDITION:** Given minimum available head for existing flow conditions.

**STANDARD:** To alleviate Head Loss.

**PERFORMANCE STEPS:**

1. Determine the hydraulic gradient.
2. Determine the distance in feet.
3. Identify Design Fuel.
4. Determine pipe size.
5. Determine dynamic pressure.
6. Calculation variations in head pressure.
7. Determine static pressure.

**REFERENCES:**

1. FM 5-482 Military Petroleum Pipeline Systems
  2. TM 3835-OI/1A Marine Corps Tactical Fuel Systems
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ENG & UTIL T&R MANUAL

APPENDIX A

ENGINEER AND UTILITIES FUNCTIONAL AREA MATRIX

1000. **ENGINEER AND UTILITIES FUNCTIONAL AREA MATRIX.** The Engineer and Utilities Functional Area Table includes the functional area and long title.

FUNCTIONAL AREA CODE	LONG TITLE
ADMN	Administrative
CMOB	Counter-Mobility
DEMO	Demolitions
EOD	Explosive Ordnance Disposal (used for EOD Personnel in ESB only)
MANT	Engineer Maintenance
MOBL	Mobility
RECN	Engineer Reconnaissance
SRVY	Surveying
SURV	Survivability
XENG	General Engineering



ENG & UTIL T&R MANUAL

APPENDIX B

GLOSSARY

Terms in this glossary are subject to change as applicable orders and directives are revised. Terms established by Marine Corps orders or directives take precedence after definitions found in Joint Pub 1-02, *DOD Dictionary of Military and Associated Terms*.

**After Action Review.** A professional discussion of training events conducted after all training to promote learning among training participants. The formality and scope increase with the command level and size of the training evolution. For longer exercises, they should be planned for at predetermined times during an exercise. The results of the AAR shall be recorded on an after action report and forwarded to higher headquarters. The commander and higher headquarters use the results of an AAR to reallocate resources, reprioritize their training plan, and plan for future training.

**Assessment.** An informal judgment of the unit's proficiency and resources made by a commander or trainer to gain insight into the unit's overall condition. It serves as the basis for the midrange plan. Commanders make frequent use of these determinations during the course of the combat readiness cycle in order to adjust, prioritize or modify training events and plans.

**Chaining.** A process that enables unit leaders to effectively identify subordinate collective events and individual events that support a specific collective event. For example, collective training events at the 4000-level are directly supported by collective events at the 3000-level. Utilizing the building block approach to progressive training, these collective events are further supported by individual training events at the 1000 and 2000-levels. When a higher-level event by its nature requires the completion of lower level events, they are "chained"; Sustainment credit is given for all lower level events chained to a higher event.

**Collective Event.** A clearly defined, discrete, and measurable activity, action, or event (i.e., task) that requires organized team or unit performance and leads to accomplishment of a mission or function. A collective task is derived from unit missions or higher-level collective tasks. Task accomplishment requires performance of procedures composed of supporting collective or individual tasks. A collective task describes the exact performance a group must perform in the field under actual operational conditions. The term "collective" does not necessarily infer that a unit accomplishes the event. A unit, such as a squad or platoon conducting an attack; may accomplish a collective event or, it may be accomplished by an individual to accomplish a unit mission, such as a battalion supply officer completing a reconciliation of the battalion's CMR. Thus, many collective events will have titles that are the same as individual events; however, the standard and condition will be different because the scope of the collective event is broader.

**Collective Training Standards (CTS).** Criteria that specify mission and functional area unit proficiency standards for combat, combat support, and combat service support units. They include tasks, conditions, standards, evaluator instruction, and key indicators. CTS are found within collective training events in T&R Manuals.

**Combat Readiness Cycle.** The combat readiness cycle depicts the relationships within the building block approach to training. The combat readiness cycle progresses from T&R Manual individual core skills training, to the accomplishment of collective training events, and finally, to a unit's participation in a contingency or actual combat. The combat readiness cycle demonstrates the relationship of core capabilities to unit combat readiness. Individual core skills training and the training of collective events lead to unit proficiency and the ability to accomplish the unit's stated mission.

**Combat Readiness Percentage (CRP).** The CRP is a quantitative numerical value used in calculating collective training readiness based on the E-coded events that support the unit METL. CRP is a concise measure of unit training accomplishments. This numerical value is only a snapshot of training readiness at a specific time. As training is conducted, unit CRP will continuously change.

**Component Events.** Component events are the major tasks involved in accomplishing a collective event. Listing these tasks guide Marines toward the accomplishment of the event and help evaluators determine if the task has been done to standard. These events may be lower-level collective or individual events that must be accomplished.

**Condition.** The condition describes the training situation or environment under which the training event or task will take place. Expands on the information in the title by identifying when, where and why the event or task will occur and what materials, personnel, equipment, environmental provisions, and safety constraints must be present to perform the event or task in a real-world environment. Commanders can modify the conditions of the event to best prepare their Marines to accomplish the assigned mission (e.g. in a desert environment; in a mountain environment; etc.).

**Core Competency.** Core competency is the comprehensive measure of a unit's ability to accomplish its assigned MET. It serves as the foundation of the T&R Program. Core competencies are those unit core capabilities and individual core skills that support the commander's METL and T/O mission statement. Individual competency is exhibited through demonstration of proficiency in specified core tasks and core plus tasks. Unit proficiency is measured through collective tasks.

**Core Capabilities.** Core capabilities are the essential functions a unit must be capable of performing during extended contingency/combat operations. Core unit capabilities are based upon mission essential tasks derived from operational plans; doctrine and established tactics; techniques and procedures.

**Core Plus Capabilities.** Core plus capabilities are advanced capabilities that are environment, mission, or theater specific. Core plus capabilities may entail high-risk, high-cost training for missions that are less likely to be assigned in combat.

**Core Plus Skills.** Core plus skills are those advanced skills that are environment, mission, rank, or billet specific. 2000-level training is designed to make Marines proficient in core skills in a specific billet or at a specified rank at the Combat Ready level. 3000-8000-level training produces combat leaders and fully qualified section members at the Combat Qualified level. Marines trained at the Combat Qualified level are those the commanding officer feels are capable of accomplishing unit-level missions and of directing the actions of subordinates. Many core plus tasks are learned via MOJT, while others form the base for curriculum in career level MOS courses taught by the formal school.

**Core Skills.** Core skills are those essential basic skills that "make" a Marine and qualify that Marine for an MOS. They are the 1000-level skills introduced in entry-level training at formal schools and refined in operational units.

**Defense Readiness Reporting System (DRRS).** A comprehensive readiness reporting system that evaluates readiness on the basis of the actual missions and capabilities assigned to the forces. It is a capabilities-based, adaptive, near real-time reporting system for the entire Department of Defense.

**Deferred Event.** A T&R event that a commanding officer may postpone when in his or her judgment, a lack of logistic support, ammo, ranges, or other training assets requires a temporary exemption. CRP cannot be accrued for deferred "E-Coded" events.

**Delinquent Event.** An event becomes delinquent when a Marine or unit exceeds the sustainment interval for that particular event. The individual or unit must update the delinquent event by first performing all prerequisite events. When the unit commander deems that performing all prerequisite is unattainable, then the delinquent event will be re-demonstrated under the supervision of the appropriate evaluation authority.

**E-Coded Event.** An "E-Coded" event is a collective T&R event that is a noted indicator of capability or, a noted Collective skill that contributes to the unit's ability to perform the supported MET. As such, only "E-Coded" events are assigned a CRP value and used to calculate a unit's CRP.

**Entry-level training.** Pipeline training that equips students for service with the Marine Operating Forces.

**Evaluation.** Evaluation is a continuous process that occurs at all echelons, during every phase of training and can be both formal and informal. Evaluations ensure that Marines and units are capable of conducting their combat mission. Evaluation results are used to reallocate resources, reprioritize the training plan, and plan for future training.

**Event (Training).** 1) An event is a significant training occurrence that is identified, expanded and used as a building block and potential milestone for a unit's training. An event may include formal evaluations. 2) An event within the T&R Program can be an individual training evolution, a collective training evolution or both. Through T&R events, the unit commander ensures that individual Marines and the unit progress from a combat capable status to a Fully Combat Qualified (FCQ) status.

**Event Component.** The major procedures (i.e., actions) that must occur to perform a Collective Event to standard.

**Exercise Commander (EC).** The Commanding General, Marine Expeditionary Force or his appointee will fill this role, unless authority is delegated to the respective commander of the Division, Wing, or FSSG. Responsibilities and functions of the EC include: 1) designate unit(s) to be evaluated, 2) may designate an exercise director, 3) prescribe exercise objectives and T&R events to be evaluated, 4) coordinate with commands or agencies external to the Marine Corps and adjacent Marine Corps commands, when required.

**Exercise Director (ED).** Designated by the EC to prepare, conduct, and report all evaluation results. Responsibilities and functions of the ED include: 1) Publish a letter of instruction (LOI) that: delineates the T&R events to be evaluated, establishes timeframe of the exercise, lists responsibilities of various elements participating in the exercise, establishes safety requirements/guidelines, and lists coordinating instructions. 2) Designate the TEC and TECG to operate as the central control agency for the exercise. 3) Assign evaluators, to include the senior evaluator, and ensure that those evaluators are properly trained. 4) Develop the general exercise scenario taking into account any objectives/events prescribed by the EC. 5) Arrange for all resources to include: training areas, airspace, aggressor forces, and other required support.

**Individual Readiness.** The individual training readiness of each Marine is measured by the number of individual events required and completed for the rank or billet currently held.

**Individual Training.** Training that applies to individual Marines. Examples include rifle qualifications and HMMWV driver licensing.

**Individual Training Standards (ITS).** Specifies training tasks and standards for each MOS or specialty within the Marine Corps. In most cases, once an MOS or community develops a T&R, the ITS order will be cancelled. However, most communities will probably fold a large portion of their ITS into their new T&R manual.

**Marine Corps Combat Readiness and Evaluation System (MCCRES).** An evaluation system designed to provide commanders with a comprehensive set of mission performance standards from which training programs can be developed; and through which the efficiency and effectiveness of training can be evaluated. The Ground T&R Program will eventually replace MCCRES.

**Marine Corps Ground Training and Readiness (T&R) Program.** The T&R Program is the Marine Corps' primary tool for planning and conducting training, for planning and conducting training evaluation, and for assessing training readiness. The program will provide the commander with standardized programs of instruction for units within the ground combat, combat support, and combat service support communities. It consolidates the ITS, CTS, METL and other individual and unit training management tools. T&R is a program of standards that systematizes commonly accepted skills, is open to innovative change, and above all, tailors the training effort to the unit's mission. Further, T&R serves as a training guide and provides commanders an immediate assessment of unit combat readiness by assigning a CRP to key training events. In short,

the T&R Program is a building block approach to training that maximizes flexibility and produces the best-trained Marines possible.

**Mission Essential Task(s) MET(s).** A MET is a collective task in which an organization must be proficient in order to accomplish an appropriate portion of its wartime mission(s). MET listings are the foundation for the T&R manual; all events in the T&R manual support a MET.

**Mission Essential Task List (METL).** Descriptive training document that provides units a clear, war fighting focused description of collective actions necessary to achieve wartime mission proficiency. The service-level METL, that which is used as the foundation of the T&R manual, is developed using Marine Corps doctrine, operational plans, T/Os, UJTL, UNTL, and MCTL. For community based T&R manuals, an occupational field METL is developed to focus the community's collective training standards. Commanders develop their unit METL from the service-level METL, operational plans, contingency plans, and SOPs.

**Mission Performance Standards (MPS).** Criteria that specify mission and functional area unit proficiency standards for combat, combat support and combat service support units. They include tasks, conditions, standards, evaluator instruction, and key indicators. MPS are contained within the MCCRES volumes. The MCCRES volumes are being replaced by T&R Manuals. Collective events will replace MPS.

**Operational Readiness (DOD, NATO).** OR is the capability of a unit/formation, ship, weapon system, or equipment to perform the missions or functions for which it is organized or designed. May be used in a general sense or to express a level or degree of readiness.

**Performance Step.** Performance steps are included in the components of an Individual T&R Event. They are the major procedures (i.e., actions) a unit Marine must accomplish to perform an individual event to standard. They describe the procedure the task performer must take to perform the task under operational conditions and provide sufficient information for a task performer to perform the procedure (may necessitate identification of supporting steps, procedures, or actions in outline form). Performance steps follow a logical progression and should be followed sequentially, unless otherwise stated. Normally, performance steps are listed only for 1000-level individual events (those that are taught in the entry-level MOS school). Listing performance steps is optional if the steps are already specified in a published reference.

**Prerequisite Event.** Prerequisites are the academic training and/or T&R events that must be completed prior to attempting the event.

**Readiness (DOD).** Readiness is the ability of U.S. military forces to fight and meet the demands of the national military strategy. Readiness is the synthesis of two distinct but interrelated levels: a) Unit readiness--The ability to provide capabilities required by combatant commanders to execute assigned missions. This is derived from the ability of each unit to deliver the outputs for which it was designed. b) Joint readiness--The combatant commander's ability to integrate and synchronize ready combat and support forces to execute assigned missions.

**Section Skill Tasks.** Section skills are those competencies directly related to unit functioning. They are group rather than individual in nature, and require participation by a section (S-1, S-2, S-3, etc).

**Simulation Training.** Simulators provide the additional capability to develop and hone core and core plus skills. Accordingly, the development of simulator training events for appropriate T&R syllabi can help maintain valuable combat resources while reducing training time and cost. Therefore, in cases where simulator fidelity and capabilities are such that simulator training closely matches that of actual training events, T&R Manual developers may include the option of using simulators to accomplish the training. CRP credit will be earned for E-coded simulator events based on assessment of relative training event performance.

**Standard.** A standard is a statement that establishes criteria for how well a task or learning objective must be performed. The standard specifies how well, completely, or accurately a process must be performed or product produced. For higher-level collective events, it describes why the event is being done and the desired end-state of the event. Standards become more specific for lower-level events and outline the accuracy, time limits, sequencing, quality, product, process, restrictions, etc., that indicate the minimum acceptable level of performance required of the event. At a minimum, both collective and individual training standards consist of a task, the condition under which the task is to be performed, and the evaluation criteria that will be used to verify that the task has been performed to a satisfactory level.

**Sustainment Training.** Periodic retraining or demonstration of an event required maintaining the minimum acceptable level of proficiency or capability required to accomplish a training objective. Sustainment training goes beyond the entry-level and is designed to maintain or further develop proficiency in a given set of skills.

**Systems Approach to Training (SAT).** An orderly process for analyzing, designing, developing, implementing, and evaluating a unit's training program to ensure the unit, and the Marines of that unit acquire the knowledge and skills essential for the successful conduct of the unit's wartime missions.

**Training Task.** This describes a direct training activity that pertains to an individual Marine. A task is composed of 3 major components: a description of what is to be done, a condition, and a standard.

**Technical Exercise Controller (TEC).** The TEC is appointed by the ED, and usually comes from his staff or a subordinate command. The TEC is the senior evaluator within the TEGC and should be of equal or higher grade than the commander(s) of the unit(s) being evaluated. The TEC is responsible for ensuring that the evaluation is conducted following the instructions contained in this order and MCO 1553.3A. Specific T&R manuals are used as the source for evaluation criteria.

**Tactical Exercise Control Group (TECG).** A TECG is formed to provide subject matter experts in the functional areas being evaluated. The benefit of establishing a permanent TECG is to have resident, dedicated evaluation authority experience, and knowledgeable in evaluation technique. The responsibilities and functions of the TECG include: 1) developing a detailed

exercise scenario to include the objectives and events prescribed by the EC/ED in the exercise LOI; 2) conducting detailed evaluator training prior to the exercise; 3) coordinating and controlling role players and aggressors; 4) compiling the evaluation data submitted by the evaluators and submitting required results to the ED; 5) preparing and conducting a detailed exercise debrief for the evaluated unit(s).

**Training Plan.** Training document that outlines the general plan for the conduct of individual and collective training in an organization for specified periods of time.

**Unit CRP.** Unit CRP is a percentage of the E-coded collective events that support the unit METL accomplished by the unit. Unit CRP is the average of all MET CRP.

**Unit Evaluation.** All units in the Marine Corps must be evaluated, either formally or informally, to ensure they are capable of conducting their combat mission. Informal evaluations should take place during all training events. The timing of formal evaluations is critical and should, when appropriate, be directly related to the units' operational deployment cycle. Formal evaluations should take place after the unit has been staffed with the majority of its personnel, has had sufficient time to train to individual and collective standards, and early enough in the training cycle so there is sufficient time to correctly identified weaknesses prior to deployment. All combat units and units' task organized for combat require formal evaluations prior to operational deployments.

**Unit Training Management (UTM).** Unit training management is the use of the SAT and Marine Corps training principles in a manner that maximizes training results and focuses the training priorities of the unit on its wartime mission. UTM governs the major peacetime training activity of the Marine Corps and applies to all echelons of the Total Force.

**Waived Event.** An event that is waived by a commanding officer when in his or her judgment, previous experience or related performance satisfies the requirement of a particular event.